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ABSTRACT

A final evaluation (two interim evaluations were previously conducted) was made of Project ICE (Implementing Career Education), which attempted to infuse career education into elementary and secondary school curriculum in St. Louis. While the earlier evaluations concentrated on the elementary level, this third one assessed the program's operation in K-12. Areas studied were as follow: teacher training, curriculum development, community involvement, and student outcomes. Each was judged according to its success in meeting the objectives established for it in the project plan. The evaluators monitored workshops, reviewed curriculum products, conducted surveys, and administered pre- and post-tests. Fifteen target, one pilot, and fifteen non-target schools were involved, with a sample of 2,130 students being tested. It was concluded that (1) fifty-three percent of the project's objectives were met; (2) nearly two-thirds of the objectives not met were student outcomes and the project was weakest in satisfying its objectives in this area; (3) the project was well designed; (4) the inservice training program produced significant results in teachers' knowledge of career education and their attitudes toward the program; (5) classroom infusion, while varying from teacher to teacher, was generally increased; (6) written lessons/units on the high school level were produced for science, math, social studies, and communication skills; and (7) the Community Advisory Council functioned very well, and a community resource guide was published. (BLG)

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PROJECT ICE
(IMPLEMENTING CAREER EDUCATION)
St. Louis, Missouri, Public Schools

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FINAL EVALUATION REPORT

The evaluation reported herein was performed pursuant to a grant from the United States Office of Education, Department of Health, Education and Welfare. Grantees undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

The assistance and cooperation of Project ICE staff and St. Louis Schools elementary principals and teachers is acknowledged gratefully. Without that cooperation and support for our research efforts, this report could not have been written.

Report Written By: Alvin Paul Sokol, Ph.D.

Manuscript Typed By: Jo Roy

Comprehensive Evaluation Services, Inc.
St. Louis, Missouri

February, 1977

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Section 1.0

EXECUTIVE SUMMARY

Summarized herein are the evaluation findings from analyses of all aspects of Project ICE. This report is the third and final evaluation of that program. The report is intended to be both summative and formative in that it presents a complete review of measurement and analysis of all aspects of the program for those who are not in close, daily contact with the project during its operational period. It is formative in that the experiences encountered during program implementation were drawn upon to recommend actions for future program planning and implementation.

Abstracted below are the findings and evaluative judgments made concerning ICE:

Project Design

The project design (both an analog and process model) was reviewed and judged appropriate as an approach to reducing the school system needs given in the project proposal.

The design was revised two or three times before the scope of the project was settled upon. The most recent revision was September, 1975. As a result, the number of teachers slated to receive large group, "single-shot" workshop training was reduced and the number of teachers scheduled to receive onsite training in their own classrooms was increased.

Ex post facto analysis revealed several problems in the project design. The areas included teacher training, curriculum writing, and student outcome objectives statements.

Staff Activity

Project staff activity was monitored throughout the term of the project. Their actions were (1) consistent with the project design, (2) appropriate to the staff job descriptions, (3) sufficient in duration and intensity to accomplish program objectives, and (4) no staff member's activity appeared to be outside the limits of the project.

Component Objectives

Teacher Inservice.

All large-group inservice events were held on schedule. They were given in community locations outside school system facilities.

The months of October and November, 1975 were taken up with large workshops to Building Coordinators in target and non-target schools. Over the winter months, two workshops for high school staff were given. However, attendance at these programs were disappointing.

In February, 1976 a series of community-based workshops for target school Grade 4-8 teachers were held.

Beginning November, 1975 elementary inservice trainers began travelling to the 15 target schools, delivering onsite, in-class training programs.

Outcomes From Inservice Workshops.

In each workshop held by the project, teachers demonstrated significant pre-post gain scores on a measure of knowledge of career education concepts. On another instrument, designed to measure feelings of accord with the project, significant changes were found for higher-order concordance.

Teacher planning for career education infusion was a problem area during the project. However, by Spring, 1976 an increased amount of cooperative teacher planning was observable.

Infusing Career Education in School Subjects.

Teacher Self-Report Checklogs. Target school Building Coordinators reported incremental amounts of career education infusion in all school subjects, as the year progressed. For example, the number of reported career activities in social studies increased from 250 in Fall, 1975 to 1,375 in Spring, 1976. In communication skills the increase was from 250 (Fall, 1975) to 1,250 (Spring, 1976).

Target teachers in the aggregate reported 2,701 separate career activities during April and May, 1976. The majority of activities were in social studies, communication skills, and reading. But some activity was reported in virtually every school subject.

The major teaching strategies used by teachers to infuse career education were: Visual aids and bulletin boards, Simulations, and Field trips. To a lesser extent teachers used these strategies: Guest speakers, Student projects and Films/filmstrips.

Classroom Observations. Program delivery was validated by a team of evaluation observers who, over a 4-1/2 month period, conducted 733 separate observations in both target schools and non-target schools.

The observation team collected both unobtrusive data and direct observational evidence. The unobtrusive data indicated career activities were evident in 71% of target classrooms and 51% of non-target classrooms. Direct observation showed that when target schools were compared with non-target schools, there were greater percentages in the former of: Careers, Self-Concepts Development and Analysis of Personal Goals and Careers.

The instruction viewed by the evaluation observers was classified as being either direct (concentrated and extended) or indirect (diffuse and general). An analysis revealed that target school teachers made significantly greater numbers of both direct and indirect references to careers. In student self-concept, target teachers made significantly more direct references. In personal analysis, target teachers made significantly more direct references.

Elementary Principals Interviews.

Fall and Spring interviews were held with target and non-target school principals to obtain their reactions to career education and the career education project. Both groups of principals were favorable to the philosophy of career education. However, this was expressed more forcefully by target principals, and non-target principals had a greater number of reservations.

A content analysis was made of the principal's remarks. The target principals made more remarks. They made a greater number of comments which were later classified as positive. Non-target teachers, on the other hand, made a greater number of comments which were later classified as neutral or negative.

There were relatively few changes, Fall to Spring. However of those few, a greater number of changes in a positive direction were made by target school principals.

High School Curriculum Development

By the end of the project term, the curriculum writers had produced a greater number of exemplary lessons/units than were specified in the proposal. These were assembled into four different guidebooks, reproduced, and disseminated.

The production rate was uneven. The project staff responsible for writing math and science units maintained a fairly regular production schedule. The production of social studies and communication skills units, however, was extremely slow at mid-year and at early Spring, 1976.

In Spring, 1976 the evaluator reviewed each available lesson/unit for the presence of specific criteria which project staff had listed in the general format. His finding was that certain criteria were consistently missing. Curriculum writers agreed with the findings and took corrective action prior to publication.

The process specified in the program design for curriculum production was not implemented ideally. The writers were to work closely with department heads in the two pilot high schools. Instead, they established contact with individual teachers and worked through those contact persons.

Some teachers trial tested the curricula in their classrooms. Some teachers reviewed draft copies of the curricula. However, this effort was short of the extent to which it was supposed to have occurred.

Student Feedback.

In the high school classrooms where curricula were trial tested, students completed a questionnaire on their reactions to the lessons. A majority reported that the lessons were more interesting due to including job-related information. Most wanted to find out more about the jobs discussed in the lessons.

The majority of student respondents saw a connection between the objectives for the lessons and the learning activities. A substantial majority endorsed the units as being relevant.

Community Involvement

A Community Advisory Council was convened. It operated throughout the term of the project. The Spring, 1976 membership roster listed 57 members representing the following organizations: School systems staff; Community service agencies; Transportation and Industry; Parents and students; Municipal government; Trade unions; Vocational School; Communications Industry; Business and banking.

The significant activities carried forward by the Council included:

- Receiving reports on the project and offering suggestions
- Providing community settings for project workshops and meetings
- Providing teaching aids to the schools
- Recommending to the Superintendent the inclusion of career education in the new "magnet schools"
- Supplying human resources for teachers' workshops
- Identifying community resources for project staff
- Observing career education in the schools through a "career caravan"
- Student outcomes

Intact classes in target and non-target schools were selected for pre and post test administrations of instruments designed to measure cognitive and affective outcomes. A sample of 1,972 students of 7,094 provided the student outcome data; 598 from the primary grades and 1,374 from Grades 4-8. A sample of that size was estimated through a sampling formula to have a mean score that is within .044 standard deviations of the population mean, at P=.05.

Since no specific course content was specified for any grade, the test treatments were assigned to the classrooms, which had been selected at random, so as to maximize comparisons within target and non-target schools and between target and non-target schools.

Primary Grades.

In Grades K-3 there were trends consistent with the direction specified in project objectives. By grades, the greatest impact of the

project appeared to be at the Kindergarten and Grade 3. There were no consequential significant differences between target and non-target schools. Nearly 90% of the comparisons resulted in no significant differences. Where differences were found in career knowledge, they favored the target schools. There were no differences in pre and post measured attitudes.

Grades 4-8.

The results were similar for the middle and upper-elementary grades. The major impact of the program seems to have been at grades 4 and 7.

Nearly 70% of the direct, matched comparisons between target and non-target classrooms resulted in no statistically significant differences. Where differences were found, they favored the target schools. This was true for career knowledge. There were no significant changes in student attitude.

The evaluator analyzed the factors which seemed related to the lack of significant differences. In his view, the major factors were that the objectives statements called for a significant gain between pre and post test. Yet, the program design was for an un-defined curriculum, with no specified expectations of student accomplishments at the different grade levels.

Overall Assessment

When viewed according to the percentage of objectives reached, the project only achieved (fully or partially) about half its intended outcomes. However, most of this stemmed from Student Outcomes and failure to implement certain processes toward achieving goals, specified in the program design document.

When the quality of project results is viewed, however, the evaluator's judgment was that the project had been generally successful. Although the teacher training effort had not proceeded exactly as specified, teachers did gain in knowledge of career education, and they did deliver increasing amounts of career education in the school programs.

Although the curriculum writing effort did not proceed precisely in the manner planned, the writers did produce quality career education curriculum which looks very promising.

The community involvement portion of the project was implemented according to the specified procedures, and all intended outcomes did occur. The community guidebook appears to be a major contribution.

Given the context of the project, it was not surprising that most student outcome measures resulted in no differences. However, in the minority of cases where differences were found, they did indicate that target schools surpassed the non-target schools. This trend was encouraging.

Based on the analyses conducted and measurement data collected, the evaluator recommended several corrective actions to be taken in the design of future career education programs.

Section 2.0

INTRODUCTION

■ *In one school a primary-grade class explored their personal feelings and the causes behind them. They wrote books about themselves, their likes and dislikes. They pantomimed and played out their emotions. They used themselves as data to study the world of feelings and emotions as a curriculum that could be aired and discussed, not suppressed.*

■ *At another school, a middle-grade class held a "brainstroming" idea session to try to predict the impact upon the neighborhood grocery that would occur through adopting metric units.*

■ *In a third school, primary children wrote to and received help from the President of a large hardware-store chain. They had "inherited" a large refrigerator packing case and wished for instructions and tools to construct a classroom playhouse.*

■ *Upper-elementary students at a fourth school explored legal careers through: (1) Law and Education, a special program, (2) Observing a trial in progress at the City Court, (3) Interviewing judges, and (4) With the help of law-school students, holding a mock trial in the model courtroom located at St. Louis University School of Law.*

The vignettes above are only examples of the literally thousands of episodes which occurred in the St. Louis Public Schools through interaction with a special project, Implementing Career Education (ICE), in school year 1975-76.

This report is the third in a series of evaluative reviews of that project. In it, the strands of inquiry into project activities and accomplishments are continued, and summary data on the outcomes from the project are reported.

Conclusions From Past Reports.

Two interim reports on the program were issued in which data were presented on the project while it was in progress. Conclusions were drawn from those data on: The consistency of the program with its design, the direction and extent of staff effort, and the components of the project in which objectives were being met on schedule and those in which activity was behind schedule.

Below are the conclusions drawn from information presented in the two earlier reports:

Project Design.

In the first report the project design was assessed as: (1) Having confronted real needs in the schools; (2) Containing objectives which, if met, should result in reducing the needs; and (3) Specifying staff roles which were consistent with the activities to be performed in order to meet objectives. In the second report, it was verified that the resources specified in the design were actually available to the project and were being drawn upon by project staff.

Staff Activity.

In both preceding reports analyses of staff activity indicated that it was (1) extensive, (2) consistent with the project model and the objectives, and (3) implemented according to schedule. Moreover, the staff members fulfilled their specified roles according to the design.

Elementary In-Service.

In both reports the data showed that the large-group inservice events were being held on schedule, and that teachers, as a result of the training, were registering significant gains in measured knowledge of career education and attitudes of accord with the project intentions. Data in the first report indicated that there was little evidence of teacher cooperative planning for infusion of career education. This improved, as was shown in the second report. However, the variation of teachers and schools in carrying out planning activities was evident.

Beginning in November, 1975, project staff provided training onsite in each of the 15 project schools. Again, there was substantial variation in teachers' training needs and in degree of teachers' commitment to career education.

Elementary Program Delivery.

The data in the first report showed that about 90 percent of the target school teachers were including career-related topics in the regular instructional program; by the time the second report was issued the percentage had climbed to 95. Direct observation in target and non-target school classrooms indicated that a substantial amount of career-self concept instruction was going forward in both types of school. However, the quality of instruction was different in that target schools tended to provide treatment of career education topics in greater depth. The instruction was infused into the school subjects, instead of seeming to have been "tacked on."

Secondary School Activity.

The initial project report indicated that the two scheduled workshops for high school teachers had been held as scheduled, but that fewer than half the specified number of participants attended. The workshops were successful in bringing about significant pre-post gains in a test of teachers' knowledge of career education, but they were not successful in securing teacher input into curriculum decisions. Reported also was that the curriculum production effort was running behind schedule for at least two subjects of the scheduled four subject-matter areas.

By the time the second interim report was issued, most of the curriculum lesson/units for the secondary schools had been written in draft form. An evaluative review of the drafts indicated that all lessons had been prepared around objectives and that the student activities were consistent with the objectives. Universally lacking in the lesson/units were objectives and activities for student self-analysis,with respect to the informational input regarding the specifics of various careers.

Community Involvement.

Data in the first interim report indicated that progress was being made on community contacts yielding entries in the Community Resource Learning Guide. By the time the second interim report was issued, the contact work had been completed, and a draft copy of the guidebook had been written.

A Community Advisory Council had been organized from Project ICE, and it contained a membership representative of the major population elements in the community. The majority of the Council's activity in the first half of the year was hearing and reacting to reports on the project. As the year progressed, the Council provided resources into the project. At mid-year, the Community Advisory Council submitted a written recommendation to the Superintendent of Schools and the Board of Education endorsing career education.

Overview of the Final Report.

In this report, those strands of inquiry are analyzed for summative purposes and updated information on secondary school curriculum writing is provided. Data on student outcomes are given, also. The subsequent sections of this report are:

Section 3.0 A Retrospective on the Project Design
Section 4.0 A Retrospective on Project Staff Activities
Section 5.0 Evaluation Findings: Teacher Training
Section 6.0 Evaluation Findings: Curriculum Development
Section 7.0 Evaluation Findings: Community Involvement
Section 8.0 Evaluation Findings: Student Outcomes
Section 9.0: Conclusions and Recommendations

Section 3.0

A RETROSPECTIVE ON THE PROJECT DESIGN

The project design was analyzed in the two previous evaluation reports on Project ICE. The design characteristics were examined with respect to adequacy of the design to bring about specified outcomes, directed toward reducing school system needs.

Those analyses were conducted while the program was still in progress. The purpose for this retropspective review is to generate information on which components and elements of the project proved able to stand up to the task and which were weak. The intention is to assist in future program planning in the school system and to point out potential design hazards to others in the educational community engaged currently in developing special projects in career education.

With the foreknowledge that "hindsight is always 20/20," and that some of the problem areas identified in this section were not obvious during the course of the program, two reviews will be reported in this section: (1) the project design and (2) the project process model.

Project ICE Design.

Project Implementing Career Education was funded through a grant from the United States Office of Education (USOE). To qualify for the grant award, school system staff developed a plan of action for incorporating career education in the schools.

The starting point for planning such a program is identification of school-system needs. Moreover, the needs identified should be urgent, of high priority. Value systems in the local community are involved here, for the needs to be confronted by the proposed project must be considered sufficiently important to justify (1) proceeding to develop the program, and (2) implementing the program if a grant is offered.

Next, an educational program consists of a sequence of planned events designed to reduce (or eliminate) the need. This includes:

- A specified set of objectives to be met through the program;
- The necessary staffing patterns to provide person-power to accomplish the stated outcomes;
- The resources available to the project to perform specified project functions;
- Activities organized according to components in the program, to be accomplished by staff, representing the project strategy for meeting objectives and reducing needs.

A diagram diagnosing the project design is shown on the next page in Figure 3.1.

Figure 3.1
A Programmatic Analysis of Project ICE (Implementing Career Education)

VALUES	NEEDS	RESOURCES	OBJECTIVES	ORGANIZATION	ACTIVITIES
•Value, Dignity of Work •School subjects should have practical value •School program should relate home-school-work-society •Throughout school students should learn about work; have contract with workers •Exiting students should be able to make mature career choices.	•Many students from ghetto areas, few job models, low expectations •Many drop-outs, or students who see school as irrelevant •Graduates not aware of the range and variety of careers available	•A broadly-based committee supported career education implementation •Successful career education project in 1973-74. •Experienced • Project Director • Administrator • Teachers •Elementary Career Education Curriculum Guide •Procedures for • In-Service • Curric. Production •Curric. Pilot-test •Community Advisory Council • Consultants • Materials •Receptive Professional Staff	•In-service training to building coordinators, teachers •Teacher knowledge of Career Education •Teacher support for Project goals •Teacher infusion of Career Education •Develop secondary curriculum units • Mathematics •Communication skills •Science •Social Studies •Classroom Pilot testing •Curriculum production •Community resource log produced •Community Advisory Council complete activities •Student cognitive and affective gains	•St. Louis Public Schools=local fiscal agent •Project Director •2 Elementary In-Service Career Education Trainers •2 High School Curriculum Developers •Resource Coordinator	•Overall management coordination •Training •Curriculum preparation •Community liaison •Design •Deliver training in •Workshops •Classrooms •Interact with high school staff •Write curricula •Oversee pilot tests •Community contact •Prepare Resource Guide •Produce High School Curriculum Guide

The elements in the design are assessed below, from the perspective of reviewing the actual processes in the project.

Needs and Values.

The needs were genuine, and they were supported adequately by evidence. The values upon which the needs statements rest were actually held by large segments of the school system and the community. However, there were a substantial number of elementary and secondary teachers who endorsed the idea of career education, but believed that it would undercut the school academic program. Another fairly prevalent attitude among some teacher subgroups was that career education would be too time consuming (e.g.,"They always add new things to teach, but never add more time to teach them.").

Resources.

The resources listed were available generally. However, program planners may have been somewhat overoptimistic in identifying some of the listed items as resources. For example:

The broadly-based committee was convened by the ex-Superintendent to study career education and its utility for the school program, and to make recommendations. Following issuing its report, the committee was not reconvened, nor did it seem to be operational during the term of Project ICE.

The elementary curriculum guide had been produced during an earlier project. However, the evaluator did not note it being in general use among teachers, and in the inservice workshops teachers were encouraged to create new topics, lessons, units for infusion, based on their own individual programs of study.

It was quite true that procedures for inservice, curriculum production, and pilot testing had been developed in an earlier career education project. However, those processes were established in three elementary pilot schools. During the course of Project ICE it was seen that the problems associated with high schools required a somewhat different set of strategies.

Objectives.

The objectives set for the project were reasonable. The major finding from experience with the project was that cognitive and affective gains by teachers in a workshop settings did not automatically translate into teachers delivering career education programs in their classrooms. The measured outcomes from all workshops were consistenly positive; yet, there was substantial teacher variation in classroom implementation patterns.

Project Organization and Activities.

The project staffing organization appeared reasonable, given the activities that were to be accomplished. As events proved, the elementary inservice component of the project needed more than two staff members. The two persons on the staff did very well, given the size of their task, but two persons could not cover the territory needed to inservice teachers in 15 schools onsite and provide the ideal amount of coverage to each school.

The activities for the secondary school curriculum writers should have been prepared after greater investigation into the operations in district high schools. For one thing, contact should have been initiated the preceeding Spring to infuse new subject matter during the 1975-76 school year. For another, departmentalized high schools cannot be approached in the same manner used to bring abouth change in an elementary school setting.

Project ICE Processes.

The manner in which staff were deployed and the processes in which they engaged in order to reach their objectives is shown through the schematic diagram in Figure 3.2.

From the process-model it may be seen that (1) Project staff drew upon resources (inputs) from three large systems; (2) Project staff impacted upon target populations (transactions); and (3) These transactions led to attaining project objectives.

Inputs.

Two Divisions from the school system provided input into the project: Curriculum supplied overall administration and Planning and Program Development assisted with the preparation of the project design.

The Advisory Council represented the larger community. Specific inputs from this source included: (1) Community settings for inservice meetings; (2) Personnel to assist the inservice training effort; (3) Instructional aids for the classroom; (4) Assistance with locating community resources; (5) Reactions to project efforts; and (6) Validation, through indicating that the program had community support.

The USOE obviously supported the project through a grant award. Another type of input was review of the program design and recommendations for improvement. For example, the original design called for the project to supply only large-group inservice to teachers from more than 100 elementary schools. The recommendation that this be revamped to include onsite, individual inservice in 15 target schools represented, in the evaluator's opinion a substatntial improvement.

Transactions.

Overall administration and direction rested with the Project Director. This person also was involved actively in every facet of the project.

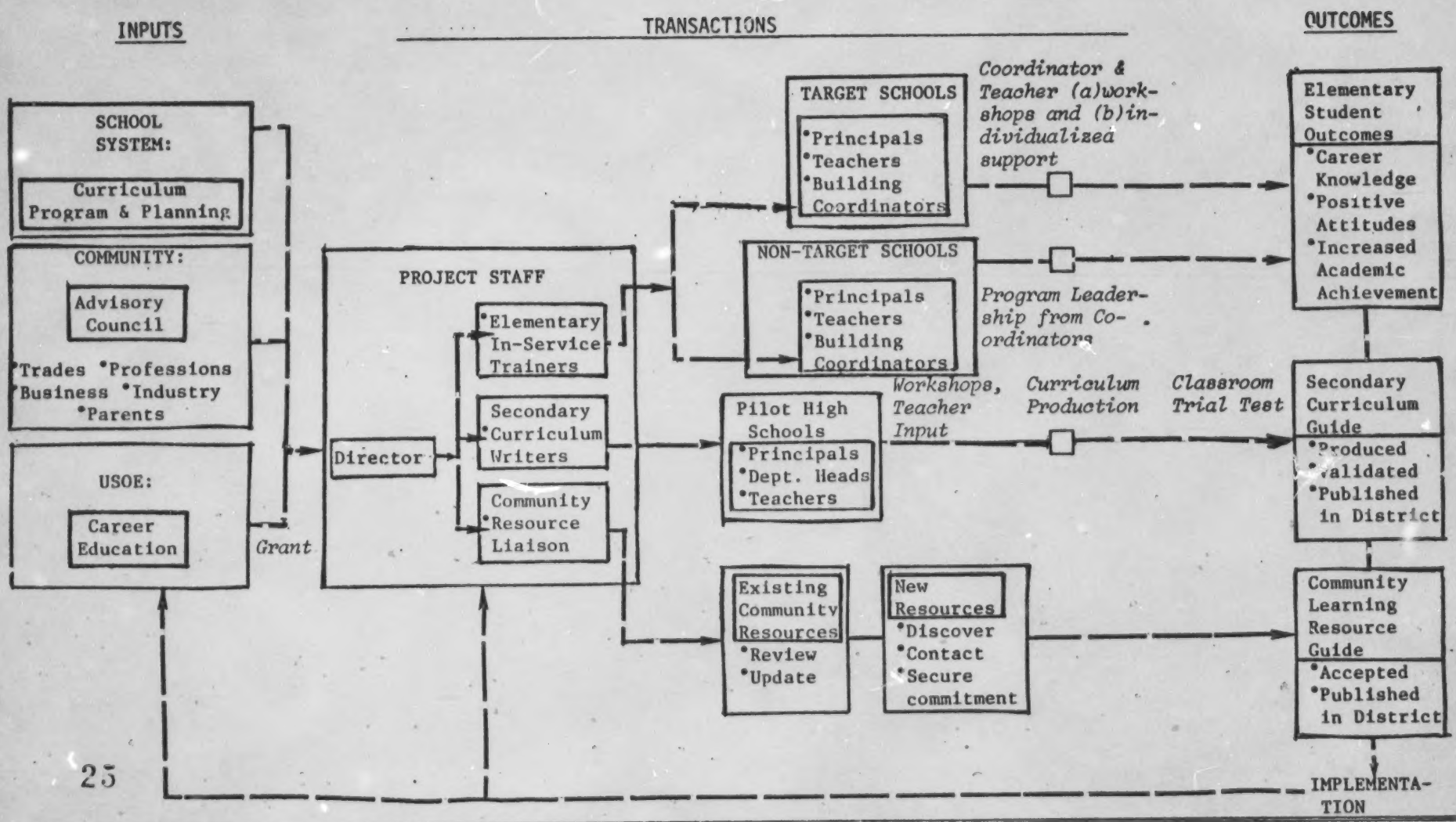


Figure 3.7 A model of Project ICE

The inservice trainers' transactions were carried forward in different ways with two different school types: Target and Non-Target. In the former they delivered: (1) Large-group workshops for Building Coordinators, followed by (2) inclass assistance to teachers throughout the school year. The program treatment for the latter consisted of only large-group inservice in the Fall for Building Coordinators who were then responsible with the principals and staff of each non-target school to design and conduct a career education program.

The curriculum writers were to generate and prepare in document form high-school level lessons/units infusing career education into four curriculum areas. Entry into the high school system at two pilot schools was to be accomplished through principals and department heads. Interaction with teachers, after suitable inservice workshops, was to lead to input into formulating the subject matter of the exemplary curriculum lessons/units.

The Community Resource Liaison staff member was to interact with both (1) Existing lists of community resources available to the schools and (2) Community leaders in various fields, knowledgeable about resources for school field trips and classroom guest speakers.

Outcomes.

For the elementary schools, the envisioned outcomes were student gains in knowledge and positive attitudes. There were two different program treatments, and students in schools receiving the "target school" treatment were expected to demonstrate greater gains than students in schools receiving the "non-target school" treatment.

The outcome from the curriculum development component was to be a Secondary career education Curriculum Guide for infusing career education into math, science, communication skills, and social studies.

The intended outcome from the community component was two-fold: (1) Production and publication of a community resource Guidebook to support world-of-work field trips and (2) Forging links through cooperative activity to the larger metropolitan community.

Taken together, those outcomes were the operational definition for the term,"Implementing Career Education."

Some of the problem areas in the project design were described in this section. In subsequent sections of this report, the extent to which the objectives were reached will be described.

Section 4.0

A RETROSPECTIVE ON PROJECT STAFF ACTIVITIES

The outcomes from a program are considered to be a result of staff effort. Basic information on any project, therefore, is the amount and direction of staff effort expended in pursuit of project goals.

These data have been reviewed in the two earlier evaluation reports. In both, the amount and types of staff effort were considered appropriate. In the present report, (1) hitherto unreported staff activity data (for April, May, and June, 1976) will be reported and (2) data on staff activity from the beginning of the project will be reviewed.

As was the case for reviewing the design, the intent is to re-evaluate based upon current knowledge of project outcomes, as an aid to future planning.

Staff activity for the final quarter of the school year, and the conclusion of the project, is summarized in Table 4.1 on the following page.

The Director's activites can be summarized as "outreach"-- carrying the project to the school sytem and the community. The Inservice Trainers' activities could be considered "culmination"-- culminating activities in the schools and concluding the project year by planning for continued efforts after the termination of the external grant. The Curriculum Writers' activities were characterized by "manuscript preparation." For these project staff, the peak period of production of lesson/units was February and March. Thus the last quarter of the project saw them editing, revising, and readying the texts for the printer.

Other important activities included: Preparation of a Parents' Handbook on Career Education, the Community Advisory Council Caravan (to observe programs in action in the schools), and Representation of the project at State and Federal meetings.

The tasks specified for the Community Resource Liaison person had been completed, and no additional responsibilities were called for, as that project role had been filled by an external consultant.

The activities appeared appropropriate in all respects except the Secondary Curriculum Writers. The rate of curriculum production was such that teacher review and limited classroom trials were held in this time period. The hastily-done nature of review and trials can be assumed from the time-frame. These activities should have been completed earlier in the project (or at least, they should have been underway).

TABLE 4.1:
A SUMMARY OF PROJECT ICE
STAFF ACTIVITY, APRIL-MAY, 1976

TIME PERIOD	PROJECT DIRECTOR	ELEMENTARY IN-SERVICE TRAINERS	SECONDARY CURRICULUM WRITERS	COMMUNITY LIAISON
Apr. 1976	Meetings with Director, staff of Human Development Corp. (HDC) in re: Community Involvement	Delivery of training to individual teachers in target schools	Curriculum materials to teachers for review, pilot test	
		Law & Education Proj. at St. Louis Univ. with 7th & 8th Gr. Yeatman School	Editing, Revision	
	Preparation Parents' Handbook on Career Education			
	Governor's Conference on Education-Career Educ. Committee, St. Louis County	Career Day: Dunbar Sch.	Pilot Testing	
		Career Day: Jefferson School		
		Career Day: Hodgen School		
	Continued meetings with HDC in re: Services available to Project & Schools	Presentors at Statewide Career Education Project's Conference, Columbia, Missouri	Editing	
		Individualized Teacher Training in Target Schools: Career Ed. Kits	Preparation of final draft, first-round curricula	
	Complete Parents' Handbook			
	Community Advisory Council: Career Education		Caravan	
May 1976	Leader: Workshop at Harris Teachers College: "Exploring World of Work," att. by Teachers, Aides, College Students	Teacher Training, Program Monitoring in Target Schools	Pilot Testing Curriculum Review	
	Conference Participant: "Career Educ.= Reassurance." at Pruitt School	Collect Project Instructional Materials out on loan in schools	Editing, Revisions, Preparation Final Draft, Balance of Curricula	
	Workshop Participant "Sports World of Work," Boys & Girls, Ages 11-16	Target Schools: Plan with teachers for continued career education infusion.		
	Speaker: "Career Education in St. Louis Public Schools," Radio Sta. KATZ		Assemble, format Curriculum Guide	
	Report Preparation Project Director's Conference, Washington, D.C.			
	Attend Director's Conference	Planning for Continued Infusion	Final Production to Printers.	
June. 1976	Records, Reports Budget	Organize Materials Office Tasks	Materials, filing Routine Office Tasks	
	Recognition Day: Clark School			
	Elementary School Graduations			

Retrospective on Earlier Staff Activity.

Project activity from proposal preparation (in February, 1975) through January, 1976 is summarized in Table 4.2. This summary was presented originally in interim evaluation report 1 (January, 1976).

It was interesting to observe the revisions which occurred in the basic plan for the project. Listed under the Director's activities, one may see that revisions occurred throughout May and June, 1975. Again, in late September, 1975 the project design was modified. Large group, one-shot training to 140 schools was modified to more intensive services to 15 target schools.

This led to implementing a school selection procedure, which was not complete until October. Since prior commitments had been made, large-group workshops were held in October and November. The resultant was that the on-site training in the 15 target schools was not activated until November, 1975.

Furthermore, when the activities of the curriculum writers are reviewed, it is seen that nearly all interaction with high school staff during the time period took place with department heads from the two pilot schools. It was not until November and January that formal meetings (in workshop settings) with teachers were held.

This was all according to the project plan. Yet, as events developed, the productive interactions occurred during direct contacts with teachers. Project planning had not taken into account that program development for new curricula for the high schools takes place the Spring and Summer preceding adoption the following Fall. Therefore, to "get career education into the picture," curriculum writers needed to have begun their efforts with high school department heads in July, 1975-- a full two months before they actually did meet with department heads and before the curriculum writer staff actually joined the project.

In Table 4.3, project staff activities during February and March, 1976 are summarized. The information was first presented in interim evaluation report 2 (April, 1976).

For the most part, activity during this time-frame was a continuation of project efforts begun in the first half-year. However, in this period it was observed that staff began moving beyond the immediate school settings for the project and participated in school systemwide activities and in statewide activities as well.

Staff attendance at out-of-town conferences or career education project sites, for professional growth and development, continued at intervals throughout the project.

Proposal preparation for a subsequent project was carried forward

Table 4.2:
A Summary of Staff Activity to January, 1976

TIME PERIOD	PROJECT DIRECTOR	ELEMENTARY IN-SERVICE TRAINERS A	ELEMENTARY IN-SERVICE TRAINERS B	SECONDARY CURRICULUM DEVELOPERS C	SECONDARY CURRICULUM DEVELOPERS D	COMMUNITY RESOURCE LIAISON
Feb. 1975 Mar. 1975 April 1975	Program Design; Proposal Preparation (with Director Curriculum; Director Planning and Programs)					
May 1975	Proposal Revision, per from OE (with Director Curriculum; Director of Planning and Program; Consultant Secondary Education Division)					
June 1975	•Increase subjects •Reduce number of staff •Reduce amount grant requested •Reduce length of project					
	G	R A N T		A W A R D		
	Revise Project scope, per amount of grant (with Curriculum Director)					
	Identify and select staff (with Personnel Division)					
	Acquire materials, supplies					
July 1975	Develop REP procedure for selecting Project Evaluator (with Director Programs and Planning, Director Evaluation, Asst. Superintendent)					Offer position to 1st candidate
	Select Evaluator			Join Project Staff		
Aug. 1975	Reactivate Community Advisory Council; recruit replacements	Join Project Staff				Acceptance, then withdrawal
	Conduct staff orientation; training	•Orientation to Project; Goals •Project Activities •Job Responsibilities •Review Professional Literature on Career Education •Review Curriculum Guides, Instructional Material •Preparation for Project				Offer job t alternate
						Acceptance, then withdrawal

Table 4.2 (continued):
Staff Activities

TIME PERIOD	PROJECT DIRECTOR	ELEMENTARY IN-SERVICE TRAINERS	SECONDARY CURRICULUM DEVELOPERS	COMMUNITY RESOURCE LIAISON
Aug. 1975	Initial Planning: Workshop for 140 Building Coordinators		Develop specifications, format for units	Job Accepted Original Candidate
Sept. 1975	Information and dissemination about Administrators in 5 sub-districts: Superintendents, Asst. Superintendents, Principals • Beaumont, McKinley, Banneker • Cleveland - Southwest • Soldan - Northwest		Project ICE to District Supervisors,	Review •C.E. Units •Secondary Curriculum Guide •Counselor Information Workshop Material
	Building Coordinators selected (with Principals) Organizational: Contact coordinators; select workshop sites in the community		Curriculum Writing	
	Information and dissemination on Project ICE to Department Heads (math, science, social studies, communication skills), city-wide			Meet with Advisory Council
	Meeting with Interracial Council of Businessmen			Meet with Proj. Staff •Format •Content for Community Learning Res. Guide
	Recruit new Advisory Council members		Meeting: Dept. Heads, 2 Pilot Schools	
	Plan, design elementary coordinator workshop; select materials; print handouts.		Curriculum Writing	
	Design workshop program; invitations			
	Prepare Project Newsletter			
	Meeting with USOE Program officers Make changes/adjustments in Project design (elementary) • 15 target and 15 non-target schools, instead of 140 • Emphasize 4-8 program • Change/adjust evaluation design			Meeting with Project Staff
Oct. 1975	Criteria for target, non-target schools (with Curriculum Director; Eval. Div. staff) School Selection	Examine workshop sites •Notify Target School Principals •Visit, confirm understandings	Distribute sample units to Pilot School Dept. Heads	Meet with Rep. of Regional Commerce & Growth Association
	Attend Values Workshop St. Louis Schools Industrial Arts Instructional Staff	Enroll workshop participants		
	First Elementary Coordinator workshop, Washington University		Curriculum writing	Elementary Workshop
	First Advisory Council Meeting at Urgan League			

Table 4.2(continued) :

TIME PERIOD	PROJECT DIRECTOR	ELEMENTARY IN-SERVICE TRAINERS	SECONDARY CURRICULUM DEVELOPERS	COMMUNITY RESOURCE LIAISON
Oct. 1975	Second Elementary Coordinator workshop, Tower Village		Department Heads Meeting 2 Pilot Schools	Elem. Workshop
	Workshop for reading-math special teachers			Review Formats for Guide Book
	Staff Professional Development: Site visit, Career Education Project, Newark, N.J.			
Nov. 1975	Information-Dissemination: •Beaument Parent Congress •Sumner Parent Congress		Workshop Planning	Develop/select format for Guidebook
	Bell Telephone Consumer Report			9 Contacts
	Dissemination: Address •Industrial Arts staff •Black Studies Students	Begin within-school Inservice program: Ea. trainer provides in-service for entire staff grade level teachers •individual classroom teachers	Meeting with Department Heads 2 pilot high schools, Curriculum Writing Follow-up meetings with teachers	Contact possibl community resources Meeting with representatives Downtown St. Louis, Inc.
	Soldan Parent Congress			Contact persons for listing as Human Resources (Occupational Models)
	Third Building Coordinator Workshop, Urban League			
	Address: A.F.T.	Workshop preparation		
	Fourth Coordinator Workshop (Bus trip to University of Missouri-Columbia Dr. Geysbers)			
	Meetings with KMOX-TV Personnel, workshop preparation			
	St. Louis Schools Administrator Assoc. Invites Dr. Hoyt	"Career Ed. Kickoff" at Hodgen School	Organize Workshop Program	
	Parent Congress: Sumner High School			
	Site visit: Project Skyline, Dallas, Texas		Visit: Project Skyline	Community Resource contacts = (45) Human Resource contacts = (23)
	First Workshop, target classroom teachers, KMOX-TV		Prepare high school workshop materials	
	Second Workshop, target classroom teachers, KMOX-TV		First high school staff workshop	
	Mullanphy School: Parent Support Corps		Sumner High School Career Day	
	Advisory Council Meeting, Bi-State Transit			

Table 4.2(Continued):

TIME PERIOD	PROJECT DIRECTOR	ELEMENTARY IN-SERVICE TRAINERS	SECONDARY CURRICULUM DEVELOPERS	COMMUNITY RESOURCE LIAISON
Dec. 1975	High School Department Head Meeting			Contact •Community (29) •Human (33) Resources
	Dissemination: •Washington University School of Social Work	Within School In-service: 15 target schools •School workshops •Locate Resource Persons	Curriculum Writing Transmit curriculum units to teachers	
	On-site visit to Project by Dr. Kenneth Hoyt			
	In Office		McKinley High School Career Day	
Jan. 1976	Department Head meetings	Target School In-service Program •After school workshops •In-class help •Demonstration lessons	Department Head meetings	Prepare for publication •Information from past contacts •Cross-reference cluster sheets •Self-help
	Office: Reports Preparation; Budget		Transmit Curric. Units to teachers	
	Prepare for Second High School Workshop		Prepare for Second High School Workshop	
	Advisory Council Meeting, KMOX-TV			
	High School Workshop	•Instructional Materials •Locate Resource Persons	High School Workshop at Bell Telephone	League-Chamber of Commerce Interview - KADI radio
	Interview, KADI Radio		Curriculum writing	
	Office: Report completion; Program planning		Teacher feedback Career Education at Univ. of Mo. Extension	Contacts: •Community (16) •Human (11) Resources

during this time period.

Analysis of Staff Effort.

Direction.

From the summaries in the Tables it was seen that project staff effort was consistent with the design and the intent of Project ICE. There were no major instances of staff departure from project purposes.

Effects of Effort.

Project Management. The Director participated in the operation of the project instead of fulfilling purely managerial functions. The areas in which the Director's activities were conducted in tandem with other staff are shown in the Tables.

TABLE 4.3:
A SUMMARY OF PROJECT ICE
STAFF ACTIVITY, FEBRUARY-MARCH, 1976

TIME PERIOD	PROJECT DIRECTOR	STAFF ELEMENTARY IN-SERVICE TRAINERS	SECONDARY CURRICULUM WRITERS	COMMUNITY LIAISON
Feb. 1976	Office	(A) (B)	(A) (B)	
	Meeting - High School Dept. Heads	Individualized In-Service: Primary Tchrs. W.S. @Mitchell Sch.	Curric. Writing	Contact Representatives of Community Resources
			Meeting - High School Dept. Heads	
	School Programs: Mitchell, Clark, Yeatman, Punbar Elementary Schools		Curriculum Writing	
	Meeting with Community Liaison	Individual Inservice	Meeting Pilot H.S. Department Heads	
				Meeting with Project Director
	(Red Carpet Week) Special Programs in: Mitchell, Herzog, Scullin Elementary Schools		Curriculum: Conference: Sec. CE Curric. Louisville Kentucky	
	Preparation: Workshop and Dissemination Program			
	Dissemination-Southwest Parents Advisory Council Meeting		Writing: Conference for Administrators, Atlanta, Georgia	Contact •Community Resources •Human Resources
	All-day workshop at Urban League			
	Workshop-Preparation		Meeting with High School Department Heads, City-Wide	
	All-day workshop at Ralston-Purina		Distrib. Educ. Conf. / Curriculum	
Mar. 1976	Proposal Preparation, with Directors •Program Planning •Curriculum	Individualized In-service	Present-ation at Sumner High School / Writing	Format: Organize Resource Guide entries by clusters
	Career Education Community Advisory Council Meeting			
	District-wide In-service day	Individualized In-service	District-wide In-service day	Refer teacher to community resources
	Program Preparation		Curriculum	Contact •Community Resources •Human Resources
	Education Fair, sponsored by Missouri Department of Education		Writing	
	Lead city teachers' workshop at Harris Teachers College	Individualized In-Service Schools: •Clay Elem Mitchell Elem. Shenandoah Benton " Humboldt Hodgen " Mt.Pleasant Longfellow Riddick Herzog Roe Yeatman Scullin Jefferson Ames	Career Guidance @ Sumner H.S.	
	Governors Conference on Education Meeting			Prepare final draft, Community Learning Resource Guide
	Meeting with Director Project 7001		Curriculum Writing	

Effects attributable to project management include:

- Selection and Organization of Staff
- Completion of Activities within Time-lines
- Relations between the Project and the School System and Systemwide, State and Federal Agency Relations
- Dissemination activities
- Overall acceptance of the project as a credible source of assistance for implementing career education
- Community participation in the program

Inservice Training. Presentation of 3 large-group workshops to Building Coordinators, Planning and delivery of 5 all-day Saturday workshops to Grade 4-8 target school teachers, and the continual delivery of on-site implementation workshops within the 15 target schools from November through May were outcomes from this project component. Moreover, teachers in target schools delivered an incremental number of career/self-concept learning activities within regular school subjects during the term of the project.

Curriculum Construction. The criterion of 25 lesson/units designed to infuse career education into each of four high school subjects was exceeded, although the process followed represented a modification of the project design. Moreover, these products were well-executed and should have utility for the school system. Those lesson/units which cannot be adopted directly can at least serve an exemplary purpose for further curriculum development by teachers.

Community Involvement. The effects of staff effort in this area were (1) development of the Community Resource Learning Guide and (2) involvement of the education, parents, business, industry, labor, transportation, and communication segments of the metropolitan community in the school program, particularly career education.

Student Outcomes. As a result of all the efforts listed above, career education learnings were delivered to students who may not have otherwise received them. Measurements of student knowledge and attitudes taken before and after program delivery were only suggestive of actual outcomes.

This was due in part to the individualistic nature of the actual instruction delivered by teachers and in part to measurement effects associated with the pre-post model. The preponderance of data indicated that no measureably significant changes occurred. However, where differences were found, they indicated the target school treatment brought about superior results.

Summary.

This review indicated that project staff activity was consistent with project design. Design problems caused the elementary inservice component to get off to a somewhat late start. Also, the design failed to accurately gauge the needed procedure for working within the high school framework. However, appropriate steps were taken, and deliverables were produced on schedule, or only slightly behind schedule.

Section 5.0

EVALUATION FINDINGS: INSERVICE TRAINING

Summarized in this section are the measured outcomes from component 1.0 of Project ICE, Teacher In-Service Training. Given below are the objectives established for this component and the evaluation of each objective.

Objective 1.1.1-- Project staff will develop a master in-service schedule and provide training to the specified teacher sub-groups according to that schedule.

This objective was met in full. The evaluator reviewed the written schedule prepared by Project ICE staff, and he attended and monitored all but two of the events. Shown in Table 5.1 is a summary of the inservice programs delivered to teacher population sub-groups, per the schedule.

Objective 1.1.2-- Building Coordinators and target school classroom teachers will demonstrate significantly greater understanding of the nature of career education and major concepts in career education, following inservice from Project ICE.

This objective was met in full. In measurement of it, a test on career education and related concepts was designed especially for Project ICE. It was based on written material to be presented in the large-group workshops, including several reprints of writings by Dr. Kenneth Hoyt.

The test was administered pre and post at workshop sessions. For target school teachers who did not attend large-group workshops, the pre-test was administered in November (simultaneous with the start of onsite inservice) and the post-test was completed in April.

The pre-post data (except for the inbuilding training teachers) were reported in interim reports 1 and 2. In Table 5.2 the pre-post results for all tests are shown.

The data show that in each instance a significant increase pre-to-post was registered.

From those results it was concluded that the Project ICE workshops were useful vehicles for bringing about gains in knowledge of the nature of career education.

Table 5.1:
Project ICE Workshop Schedule

Target Group	Date	Place	Time
Elementary Building Coordinators	Oct. 4	Washington University	9-3
Elementary Building Coordinators	Oct. 11	Tower Village	9-3
Reading and math Special Teachers, 15 Schools	Oct. 30	L'Ouverture Elem. School	
Elementary Building Coordinators	Nov. 1	Urban League	9-3
Elementary Building Coordinators	Nov. 8	University of Missouri-Columbia; Dr. Geysbers	Lv. St. Louis 8 A.M. Lv. Columbia 2 P.M.
Grades 4-8 Classroom Teachers, Target Schools	Nov. 15	KMOX-TV (CBS)	9-3
Grades 4-8 Classroom Teachers, Target Schools	Nov. 22	KMOX-TV (CBS)	9-3
Pilot High School Teachers, Admin.	Nov. 22	Tower Village	9-3
Grades K-8 Classroom Teachers Building Workshops, continued Implementation	Dec. 1 Dec. 4 Dec. 17	Ames Elem. School Roe Elem. School Scullins Elem. School	3-5:30
Pilot High School Teachers, Admin.	Jan. 17	Southwestern Bell Telephone Co.	9-3
Grades 4-8 Classroom Teachers, Target Schools	Feb. 14	Southwestern Bell Telephone Co.	9-3
Grades 4-8 Classroom Teachers, Target Schools	Feb. 21	Ralston-Purina Co.	9-3

TABLE 5.2:
DISTRIBUTION AND SIGNIFICANCE OF DIFFERENCE IN PRE-POST MEASURES OF CAREER EDUCATION CONCEPTS AMONG TEACHERS RECEIVING PROJECT ICE TRAINING

TEST SCORES (INTERVALS)	TARGET & NON-TARGET* COORDINATORS' WORKSHOPS Oct. & Nov. 1975				TARGET TEACHERS' WORKSHOP FEB. 1976		TARGET IN-BUILDING TRAINING NOV.75-MAY 76		HIGH SCHOOL TEACHERS WORKSHOP JAN. 1976	
	PRE f	POST f	PRE f	POST f	PRE f	POST f	PRE f	POST f	PRE f	POST f
19-20	1	2	---	2	---	---	1	3	---	---	---	1
17-18	4	13	6	9	7	13	12	16	6	23	3	10
15-16	18	11	9	11	17	16	17	30	54	76	19	14
13-14	6	5	6	5	3	1	21	6	46	28	5	4
11-12	---	1	5	---	5	1	5	1	6	13	1	2
9-10	3	---	1	---	---	1	---	1	6	---	3	1
7-8	---	---	---	---	1	---	---	---	2	---	---	---
5-6	---	---	---	---	---	---	2	1	2	---	1	2
3-4	---	---	---	---	---	---	---	---	24	6	1	---
N =	32		27		33		58		146		34	
$\bar{X}$ =	14.4	16.6	14.7	16.5	13.9	15.2	13.6	14.7	11.3	13.5	13.7	14.9
σ =	1.9	1.3	2.2	0.5	1.9	1.4	2.4	2.2	4.4	2.85	3.8	3.1
t =	-5.37		-4.02		-4.89		-2.81		-3.32		-3.77	
P =	<.005		<.005		<.005		<.005		<.005		<.005	

*NOTE: A slightly different form of the test was given to these groups.

Objective 1.1.3-- 98 percent of Building Coordinators will express accord with the intent of Project ICE and will express a desire to incorporate career education in their own teaching practice.

Objective 1.1.4-- Among classroom teachers in the target schools there will be a significant increase in expressed accord with Project ICE and personal desire to incorporate career education into their teaching practice.

The objectives above were met to a practically-significant extent.

For project ICE a pre-post affective measure was designed, based upon the taxonomy of objectives in the affective domain. Therefore, each successive statement on the instrument reflected a deeper level of accord with the intentions of the project. It was expected that nearly all respondents would answer positively to the first one or two statements, but that there would be greater variability toward the last one or two statements.

The instrument was administered according to the same schedule as the cognitive test used to measure the objectives above.

To measure the objectives, the calculation of percentages of responses was straightforward. To measure the significance levels from pre-to-post, the technique used was MacNemar's Test for the Significance of Changes.

Summarized in Table 5.3 is the distribution of responses to each item on the affective measure from the following training events: (1) 3 workshops for Building Coordinators; (2) Title I Reading specialist-teachers; (3) the January high school staff workshop; (4) the February elementary teachers Saturday workshops; and (5) the target school teachers who did not attend a Saturday workshop.

The data indicate the most workshop participants and onsite trainees stated substantial accord with the intent of the project. More than 90 percent expressed higher-order levels of commitment to infuse career education, also. It was not surprising that the Title I teachers were least in accord, as their program contains stringent guidelines on what is to be taught under Title I.

The single item that appeared to cause the respondents to hold back was "Be considered as capable in teaching career education as other school subjects." Teachers evidently did not see that as part of the configuration of installing and conducting a career education instructional program.

The significance of pre-post changes was calculated for the target school teachers in workshop settings and in the onsite inservice settings. The results for the former are displayed in Table 5.4 and for the latter in Table 5.5.

TABLE 5.3: SUMMARY OF ATTITUDINAL OUTCOMES BY PERCENT

ITEM	RESPONSES	COORDINATORS	TITLE I	HIGH SCHOOL	WORKSHOP	BUILDING IN-SERVICE
Awareness of Career Education	Aware	99.2%	93.3%	97.%	100.%	100.%
	Not Sure	----	----	3.	----	----
	Not Aware	----	6.6	---	----	----
Receive Career Education info	Willing	99.2%	96.6%	93.%	100.%	98.%
	Not Sure	----	3.3	3.	----	----
	Not Willing	----	---	3.	----	2.
Participate in Workshop	Willing	94.3%	70.0%	93.%	99.%	93.%
	Not Sure	3.3	26.6	3.	1.	5.
	Not Willing	----	3.3	3.	----	2.
Apply Teaching Techniques	Desire	92.7%	63.3%	80.%	99.%	95.%
	Not Sure	3.3	26.6	13.	1.	2.
	Do Not Desire	2.4	6.6	7.	----	2.
Draw on Teaching Materials	Intend	69.1%	43.3%	93.%	99.%	91.%
	Not Sure	24.4	30.0	3.	1.	9.
	Do Not Intend	4.1	20.0	3.	----	----
Acquire Work World Knowledge	Desire	91.1%	56.6%	100.%	100.%	95.%
	Not Sure	3.3	36.6	----	----	5.
	Do Not Desire	0.8	3.3	----	----	----
Career Educ. Objectives as Learning Outcomes	Intend	90.7%	66.6%	87.%	99.%	98.%
	Not Sure	1.6	23.3	10.	1.	2.
	Don't Intend	----	3.3	3.	----	----
Career Educ. Part of Program	Important	93.5%	90.0%	83.%	100.%	98.%
	Not Sure	4.9	6.6	17.	----	----
	Not Important	----	3.3	----	----	2.%
Considered Capable in Career Education	Important	65.6%	56.6%	83.%	96.%	84.%
	Not Sure	19.5	26.6	17.	4.	9.
	Not Important	11.4	16.6	----	----	5.
Include Career Education Whenever Possible	Support	96.7%	93.3%	90.%	100.%	98.%
	Not Sure	2.4	6.6	10.	----	2.
	Don't Support	----	----	----	----	----
		N=123	N=30	N=34	N=58	N=143

(Composite from 3 workshops)

TABLE 5.4
SIGNIFICANCE OF CHANGES IN WORKSHOP PARTICIPANTS' ACCORD WITH CAREER EDUCATION IMPLICATIONS FOR (a) TEACHING PRACTICES AND (b) THE SCHOOL PROGRAM

Items Measured	Responses	PRE (Percent)	POST Response)	Percent Change	Significance of Changes
Aware of career education as a trend	Aware	67	69	+2.8	Not Sure→Aware
	Not Sure	2	0	-2.8	$\chi^2 = 0$ (N.S.)
	Not Aware	0	0	0.0	
Receive information on career education	Willing	68	69	+1.5	Not Sure→Aware
	Not Sure	1	0	-1.5	$\chi^2 = 0$ (N.S.)
	Not Willing	0	0	0.0	
Participate in workshop activities	Willing	64	68	+5.8	Not Sure→Aware
	Not Sure	4	1	-4.3	$\chi^2 = 1.33$ (N.S.)
	Not Willing	1	0	-1.5	Not Willing→Willing
					$\chi^2 = 0$ (N.S.)
Apply teaching techniques related to career education	Desire	65	68	+4.3	Not Sure→Desire
	Not Sure	4	1	-4.3	$\chi^2 = 1.33$ (N.S.)
	Don't Desire	0	0	0.0	
Draw on career education teaching materials	Intend	65	68	+4.3	Not Sure→Intend
	Not Sure	4	1	-4.3	$\chi^2 = 1.33$ (N.S.)
	Don't Intend	0	0	0.0	
Acquire work world knowledge to include in teaching	Desire	68	69	+1.5	Not Sure→Desire
	Not Sure	1	0	-1.5	$\chi^2 = 0$ (N.S.)
	Don't Desire	0	0	0.0	
Make career education objectives part of class learning outcomes	Intend	65	68	+4.3	Not Sure→Intend
	Not Sure	4	1	-4.3	$\chi^2 = 1.33$ (N.S.)
	Don't Intend	0	0	0.0	
Career education learnings part of school program for self and other teachers	Important	63	69	+8.7	Not Sure→Important
	Not Sure	6	0	-8.7	$\chi^2 = 4.166$
	Not Important	0	0	0.0	Significant @ <.025
Be considered as capable in teaching career education as other school topics	Important	59	66	+10.1	Not Important→Importa
	Not Sure	3	3	0.0	$\chi^2 = 5.143$
	Not Important	7	0	-10.1	Significant @ <.025
Viewpoint: Career education should be included whenever possible in the schools	Support	66	69	+4.4	Not Sure→Support
	Not Sure	3	0	-4.4	$\chi^2 = 1.33$ (N.S.)
	Don't Support	0	0	0.0	

N=69

TABLE 5.5
TEACHER ATTITUDES TOWARD CAREER EDUCATION'S IMPLICATIONS FOR (A) PRACTICE AND (B) SCHOOL PROGRAM BEFORE AND AFTER TRAINING ONSITE AND THE SIGNIFICANCE OF THOSE CHANGES

Items Measured	Responses	PRE	POST	Percent Change	Significance of Changes
Aware of career education as a trend	Aware	142	143	+2.3	Not Sure→Aware
	Not Sure	1	0	-2.3	χ^2=0
	Not Aware	0	0	---	
Receive information on career education	Willing	142	142	---	Not Sure→Not Willing
	Not Sure	1	0	-2.3	χ^2=0
	Not Willing	0	1	+2.3	
Participate in workshop activities	Willing	96	140	+26.2	Not Sure→Willing
	Not Sure	40	2	-23.8	χ^2=2.77**
	Not Willing	7	1	- 2.3	Not Willing→Willing
					χ^2=1.33
Apply teaching techniques related to career education	Desire	100	141	+26.2	Not Sure→Desire
	Not Sure	43	1	-28.6	χ^2=10.08**
	Don't Desire	0	1	+ 2.3	Not Sure→Don't Desire
					χ^2=0
Draw on career education teaching materials	Intend	130	139	+21.4	Not Sure→Intend
	Not Sure	13	4	-21.4	χ^2=11.11**
	Don't Intend	0	0	---	
Acquire work world knowledge to include in teaching	Desire	140	141	+2.3	Not Sure→Desire
	Not Sure	3	2	-2.3	χ^2=0
	Don't Desire	0	0	---	
Make Career education objectives part of class learning outcomes	Intend	137	142	+11.8	Not Sure→Intend
	Not Sure	5	0	- 9.5	χ^2=0
	Don't Intend	1	1	- 2.3	Don't Intend→Intend
					χ^2=0
Career education learnings part of school program for self and other teachers	Important	134	142	+19.0	Not Sure→Important
	Not Sure	7	0	-16.7	χ^2=0.44
	Not Important	2	1	- 2.3	Not Important→Important
					χ^2=0
Be considered as capable in teaching career education as other school topics	Important	79	136	+30.9	Not Sure→Important
	Not Sure	54	4	-28.6	χ^2=2.08
	Not Important	10	2	- 2.3	Not Important→Important
					χ^2=1.33
Viewpoint: Career education should be included whenever possible in the schools	Support	140	142	+ 4.8	Not Sure→Support
	Not Sure	3	1	- 4.8	χ^2=0.5
	Don't Support	0	0	---	

N= 143

*Significant @ P=<.025
**Significant @ P=<.005

The data in Table 5.4 show that changes were registered on each item statement by workshop participants. However, measureable significant changes were obtained for the following items:

"Career education learnings should be made a part of the school program outcomes by myself and other teachers."
[FROM *NOT IMPORTANT* TO *IMPORTANT*]

"Be considered as capable in teaching career education as other school topics."
[FROM *NOT IMPORTANT* TO *IMPORTANT*]

The data in Table 5.5 indicate that changes in all item statements occured also for teachers who received inclass assistance without week-end workshops. Measureable significant changes occurred over three item statements:

" I am willing to participate in workshop activities."
[FROM *NOT SURE* TO *WILLING*] and
[FROM *NOT WILLING* TO *WILLING*]

"I desire to apply in my class teaching techniques related to career education."
[FROM *NOT SURE* TO *DESIRE*]

"I intend to draw on career education teaching materials."
[FROM *NOT SURE* TO *INTEND*]

The trend in the data suggest that significant changes toward accord with the project can be obtained with either workshop treatment or onsite, inbuilding training. However, in the groups measured here, teachers who received a workshop treatment in addition to onsite training evidenced deeper feelings of accord, or higher personal commitment levels.

Objective 1.1.5-- Elementary target school teachers will express significantly greater feelings of (a) accord with Project ICE intent and (b) personal desire to incorporate career education into their classroom practice.

The analyses above indicate that this objective was met partly. It was met for those teachers who had received both workshop and in-class training from the project.

Objective 1.1.6.-- Target schools Building Coordinators will prepare specific palns for infusing Elementary Career Education Curriculum Guide units in school subjects with assistance from classroom teachers.

This objective was not met. The curriculum guidebook was not featured prominently in the workshops or the onsite inservice. Instead, teachers were encouraged to infuse career education into their current school programs. Creativity and spontaneity were encouraged. Where the Guide was mentioned, it was given as an example of how to infuse career education. Teachers were encouraged to use it as a take-off point.

Objective 1.1.7-- AT least 80 percent of the target school teachers will assist the building coordinator in preparing specific plans for infusing Curriculum Guide units into school subjects.

This objective was not met in any consequential manner. First, as the project actually operated, the Curriculum Guide was not central to building an infusion program. The training emphasis was upon teacher awareness and infusion based on the *actual instruction program followed by each teacher*. Second, the emphasis during Fall semester seeemed to be upon individual teacher planning, rather than coordinated group (or grade level)planning. Indeed the set-up in many of the schools was not conducive to group planning stances, as was envisioned in the original project design.

Third, the planning stance was hampered in the first half-year of the project in that staff had designed two forms to be used as planning documents. It turned out that these required more writing than teachers cared to do. Fourth, the role of the Building Coordinator proved to be difficult to implement, in that teachers were asked to take on extra job responsibilities without any corresponding time allotment. Thus, the role was implemented differentially in different schools.

The planning stance of target school teachers improved after November, when project inservice staff began inservicing in each individual building. At first, planning took place between each teacher and the project trainers. By February, the evaluator observed group planning taking place in a workshop. Planning appeared to be facilitated by the development of a new form, which did not require a great deal of writing.

Objective 1.1.8-- 98 percent of target school teachers will infuse career education/self-awareness from the Curriculum Guide into school subjects, according to the schedule in the infusion plan.

The objective *as stated* was not met. The fact that units from the guidebook were not the focus of infusion into subjects was addressed above. Moreover, there were no general infusion plans developed.

The objective was met, however, to a practically significant extent. Summary reports reviewed by the evaluator revealed that career education infusion was carried forward by nearly 94 percent of the target school teachers. In must be emphasized, though, that the effort was variable; some teachers regularly infused career education and some did so only sporadically. The net effect was one of considerable infusion activity.

One of the functions fulfilled by the Building Coordinators was reporting each month on the career education activities in her school, by grades and by type of activity.

Presented in Table 5.6 is a summary of infusion activites in target schools for the months of April and May. The data show (1) infusion occurred in each target school; (2) Nearly 92 % of the teachers reported career-related activity; (3) the effort reached nearly 96 % of the students; and (4) generally, the percentage of career infusion activities increased from the lower grades to the higher.

TABLE 5:6:
CAREER EDUCATION INFUSION ACTIVITIES IN 15 TARGET SCHOOLS
DURING APRIL AND MAY, 1976, BY GRADES-FREQUENCIES AND PERCENTS

GRADE LEVEL		NUMBER OF SCHOOLS	NUMBER OF TEACHERS	NUMBER OF STUDENTS	SCHOOL SUBJECTS: Art	Music	Reading	Penmanship	Health	Science	Spelling	Math	Lang. Arts	Phys. Educ.	Social Studies	TOTAL
K	N	14*	21	708	31	27	10	1	3	13	1	14	49	2	61	212
	%	*100.0*	*95.6*	*96.3*	*15*	*13*	*5*	*<1*	*1*	*6*	*<1*	*7*	*23*	*<1*	*28*	*7*
1	N	15	31	891	20	26	35	2	9	5	2	23	46	5	52	225
	%	*100.0*	*91.2*	*97.2*	*9*	*12*	*16*	*1*	*4*	*2*	*1*	*10*	*20*	*2*	*23*	*8*
2	N	15	29	830	17	10	36	8	10	11	5	13	45	4	51	210
	%	*100.0*	*90.6*	*96.7*	*8*	*5*	*17*	*4*	*5*	*5*	*2*	*6*	*21*	*2*	*24*	*7*
3	N	14	20	571	16	4	27	14	6	12	13	19	35	11	58	215
	%	*100.0*	*95.2*	*95.2*	*7*	*2*	*13*	*6*	*3*	*5*	*6*	*9*	*16*	*5*	*27*	*8*
4	N	15	27	848	14	11	32	10	15	25	14	18	43	13	73	268
	%	*100.0*	*87.1*	*92.8*	*5*	*4*	*12*	*4*	*6*	*9*	*5*	*7*	*16*	*5*	*27*	*10*
5	N	14	22	801	22	19	50	18	17	24	24	21	41	15	60	311
	%	*100.0*	*81.5*	*96.5*	*7*	*6*	*16*	*6*	*5*	*8*	*8*	*7*	*13*	*5*	*19*	*12*
6	N	13	19	645	13	7	41	8	12	21	9	16	36	10	57	230
	%	*100.0*	*95.0*	*94.7*	*6*	*3*	*18*	*3*	*5*	*9*	*4*	*7*	*16*	*4*	*25*	*9*
7	N	13	25	766	33	24	56	24	25	32	29	42	52	27	76	420
	%	*100.0*	*96.2*	*95.9*	*8*	*6*	*13*	*6*	*6*	*8*	*7*	*10*	*12*	*6*	*18*	*16*
8	N	15	26	838	52	43	69	25	49	50	40	57	83	42	100	610
	%	*100.0*	*92.8*	*97.2*	*9*	*7*	*11*	*4*	*8*	*8*	*7*	*9*	*14*	*7*	*16*	*23*
*Indicates Grade Not Not Contained in all 15 Schools			Total Infusion Activities Percent/Subject		218 *8*	171 *6*	356 *13*	110 *4*	146 *5*	193 *7*	137 *5*	223 *8*	430 *16*	129 *5*	588 *22*	2701

From the teachers' reports, a pattern can be noted concerning the school subjects in which career learnings were infused most frequently. The subject most used as a vehicle for infusion was social studies, followed in order by language arts (communication skills), and reading. Generally, career learning was infused into language arts more heavily at the primary grades, and in reading at the middle grades.

Teacher reporters further provided information on the strategies, or techniques, used to infuse career education. These data are shown in Table 5.7.

The two most freqently-used strategies during this time period were bulletin boards and other visual displays and simulation. World-of-Work field trips were reported as the next most frequently-used strategy. It was noteworthy that Guest Speakers were among the fourth-ranked technique in terms of frequency, and Interviewing was among the least-utilized strategy.

These data were reported in the two earlier evaluation reports, summarized by time periods. A complete record exists on the rate of infusion from November, 1975 through May, 1976. Those data were reviewed to note the pattern of infusion into school subjects.

Displayed in Figure 5.1 are the increments in career infusion by target school teachers in the various school subjects.

From the Figure, one can see that most infusion activities were in social studies and language arts from November, 1975 onward. In November, relatively few career education topics were infused into reading, but greater increments occurred through March and through May.

For math, an incremental amount of infusion took place between November and March, but this lessened over time.It is noteworthy that comparatively little infusion was reported in the following subjects: art, science, health, and physical education. In the evaluator's opinion these areas all represent fertile ground for infusing career topics.

A second source of information on inclass infusion was direct observation of classrooms. These observations were conducted by a three-person team of external observers, trained by the evaluator. The purpose for the classroom observations were two-fold: (1) To verify infusion reports from Building Coordinators and (2) To determine the extent of career education instructional delivery as an aid in interpreting the findings from pre-post test scores administered to students.

The observation were conducted in both target and non-target schools. The period of observation was January, 1976 through April, 1976. The observation data were recorded on especially-designed forms. The individual observations from each class were summarized for analysis.

The scope of the observation effort is summarized in Table 5.8. The summary data show that 387 observations were made in target schools and 346 classroom observations were made in the non-target schools. Each teacher was observed about 1.6 times, on the average.

TABLE 5.7:
INSTRUCTIONAL STRATEGIES USED TO INFUSE
CAREER EDUCATION, BY GRADES AND BY PERCENT

Grade Levels		Films, Strips	Records, Tapes	T.V.	Guest Speakers	Discussions	Report Preparation	Newspapers, Magazines	Visual Aids, Displays	Reading	Kits	Simulation	Interview	Shadowing	Field Trips	Student Projects	Artwork	Other	Totals
K	N	27	19	6	5	4	3	5	31	4		59			15	6	28		212
	%	*13*	*9*	*3*	*2*	*2*	*1*	*2*	*15*	*2*		*28*			*7*	*3*	*13*		*7*
1	N	14	19	5	30	19	16	4	20	20		47	1		6	10	14		225
	%	*6*	*8*	*2*	*13*	*8*	*7*	*1*	*9*	*9*		*21*	*<1*		*3*	*4*	*6*		*8*
2	N	14	9		22	12	12	16	51	14	3	27			11	7	12	1	210
	%	*7*	*4*		*10*	*6*	*6*	*8*	*24*	*6*	*1*	*13*			*5*	*3*	*6*	*<1*	*7*
3	N	24	8	1	12	20	19	15	54	16	6	17	1		8	4	9	1	215
	%	*11*	*3*	*<1*	*5*	*9*	*9*	*7*	*25*	*7*	*2*	*8*	*<1*		*3*	*2*	*4*	*<1*	*8*
4	N	20	13		19	29	27	17	30	18	23	23	4		22	19	4		268
	%	*7*	*5*		*7*	*10*	*10*	*6*	*11*	*7*	*9*	*9*	*1*		*8*	*7*	*1*		*10*
5	N	11	2	1	6	12	14	22	19	26	11	28	32		71	50	6		311
	%	*4*	*<1*	*<1*	*2*	*4*	*5*	*7*	*6*	*8*	*4*	*9*	*10*		*23*	*16*	*2*		*12*
6	N	8		1	6	32	21	21	13	12	27	23	4		37	13	11	1	230
	%	*3*		*<1*	*2*	*14*	*9*	*9*	*6*	*5*	*12*	*10*	*1*		*16*	*6*	*4*	*<*	*9*
7	N	30	13		23	36	30	35	33	18	38	27	27	11	19	39	30	11	420
	%	*7*	*3*		*5*	*9*	*7*	*8*	*8*	*4*	*9*	*6*	*6*	*3*	*4*	*9*	*7*	*2*	*16*
8	N	48	25		61	55	37	29	44	27	35	55	39		63	61	31		610
	%	*8*	*4*		*10*	*9*	*6*	*5*	*7*	*4*	*6*	*9*	*6*		*10*	*10*	*5*		*23*
Overall Total		196	108	14	184	219	179	163	295	155	143	306	108	11	252	209	145	14	2701
Overall Percent		*7*	*4*	*<1*	*7*	*8*	*7*	*6*	*11*	*6*	*5*	*11*	*4*	*<1*	*9*	*8*	*5*	*<1*	

Percents may add to slightly more or less than 100% due to rounding.

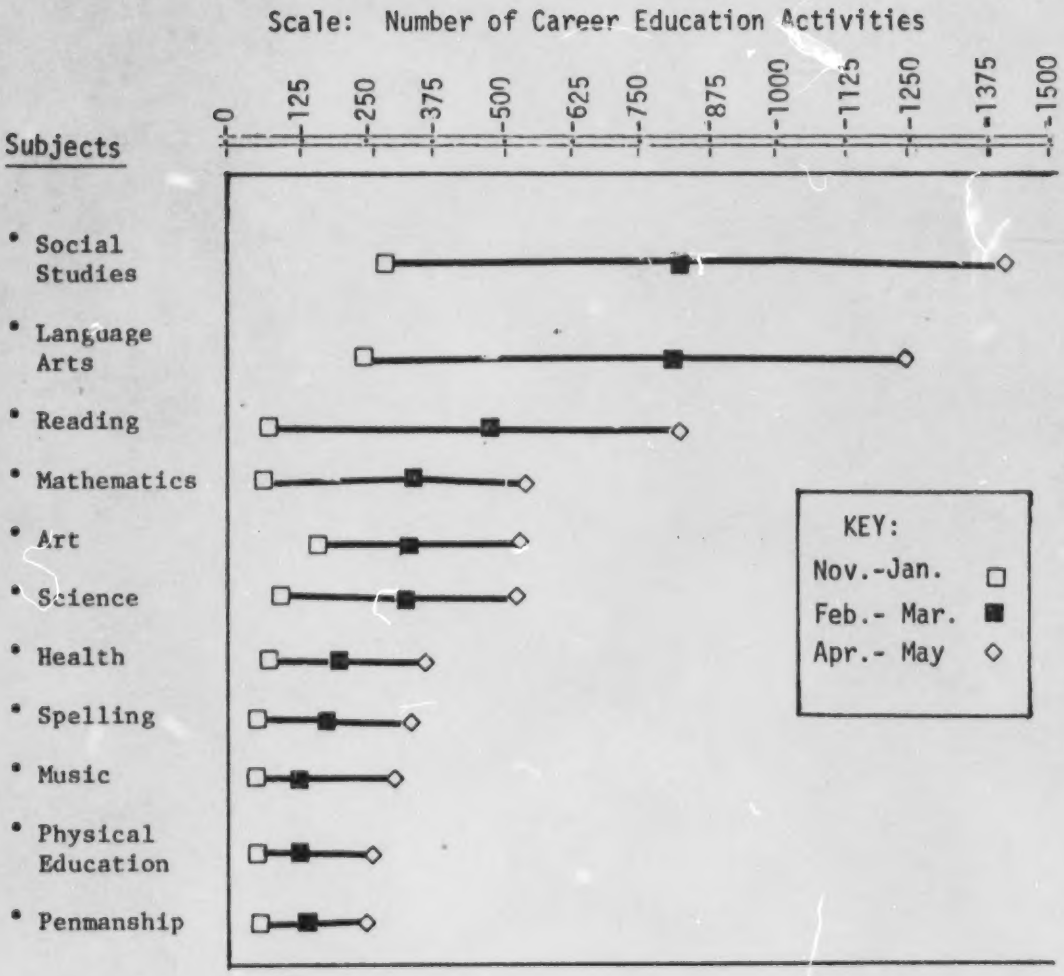


Figure 5.1:
Increments in Career Infusion in School Subjects in Target Schools During Project Training Period, November, 1975 Through May, 1976

TABLE 5.8:
DESCRIPTIVE SUMMARY OF THE SCOPE OF EXTERNAL EVALUATION OBSERVATIONS: SCHOOL, TEACHERS, GRADES

School	TARGET K	1	*	2	*	3	*	4	*	5	*	6	*	7	*	8	No. Teachers Per School	No. Obs. Per School	Obs./ Teacher
Ames	1	2		1		1		2		1		1		1		2	12	25	2.1
Benton	1	2			1	1		1	1			1		2		2	12	19	1.6
Clay	1	2		1		2		1		1		1		1		2	12	24	2.0
Herzog	2	4		2		2		4								3	17	11	0.7
Hodgen	2	2		2		2		2		2				1	1	1	15	28	1.9
Humboldt	1	1		1		1		2		1		1		2		2	12	19	1.6
Jefferson	3	4	1		3	1		2		2		1	1	1	2		21	24	1.1
Longfellow			1		1				1		1		1			1	6	13	2.2
Mitchell	3	4		3				2		3	1	2		3		3	24	26	1.1
Mt. Pleasant	1	1	2			1		1		1		1		1		1	10	21	2.1
Riddick	2	1	1	1		1		2		2	1		1	1		1	14	27	1.9
Roe	1	2		2		1		2		2		1	1	1		2	15	29	1.9
Scullin	1	3		3		3		4		3		3		3		3	26	28	1.1
Shenandoah	1	2		2	1	1		2		2				2		2	15	32	2.1
Yeatman	2	5		5		2		4		3		4		2		3	30	61	2.0
No. Classes/ Grade	22	35	5	23	6	23		31	2	23	3	16	4	21	3	28	241		
No. Obs./ Grade	33	54	9	37	8	32		51	3	39	4	27	7	35	2	46		387	
X Obs./ Grade	1.5	1.5	1.8	1.6	1.3	1.4		1.6	1.5	1.7	1.3	1.7	1.8	1.1	0.7	1.6			1.6

School	K	1	*	2	*	3	*	4	*	5	*	6	*	7	*	8	No. Teachers Per School	No. Obs. Per School	Obs./ Teacher
Banneker	1	1		1		1		1		1		1		1		1	9	18	2.0
Carr								5		3							8	15	1.9
Columbia		2	1			2		1		1		1		2		2	12	20	1.7
Cupples	2	3		4	1	1		4		2		2		3		2	24	19	1.3
Dozier	1	1			1	1		1		1		4		2		1	12	17	1.4
Euclid	2	2		1	1			2		1	1	1					11	18	1.6
Fanning	1	2	1	2		2	1	1	1	2		2	1	1	1	2	20	33	1.6
Fremont	2	2		2		3		2	1	2		2	1	1		2	20	33	1.7
Kennard	1	1		1		1		1		1		1		1		1	9	18	2.0
Lafayette	2	1		1		1		1		1		1		1		1	11	29	2.6
Mallinkrodt	1		1				1		1	1			1	1		1	8	18	2.3
Shepard	1	2		1	1	1		1	1	1		4		2		1	16	28	1.8
Sherman	1	1	1	2		1	1	3		3		3		3	1	2	22	21	0.9
Woodward	2	3		1	1	1		2		2		1		2	1	1	17	30	1.8
Wyman	1	3		1		2		2		2		2		1		1	15	29	1.9
No. Classes/ Grade	18	23	4	17	5	17	3	27	4	24	1	25	4	21	3	18	214		
No. Obs./ Grade	31	36	7	25	7	27	4	44	8	41	2	38	9	33	5	29		346	
X Obs./ Grade	1.7	1.6	1.8	1.5	1.9	1.6	1.3	1.6	2.0	1.7	2.0	1.5	2.3	1.6	1.7	1.6			1.6

*Denotes combined classrooms, e.g. 4th-5th, etc.

The observation team were on the alert for both indirect and direct evidence of career education in the classrooms. Summarized in Figure 5.2 are the results of searching for unobtrusive evidence of career infusion.

Overall, unobtrusive evidence of career education was discovered in target schools in about 71 percent of the observations. In non-target schools, the percentage rate was only about 51 percent.

Specifically, the observers noted more visual displays--bulletins in target schools as well as more instruction kits in use, and slightly more observations yielded work in progress. On the other hand, in non-target schools, the observers recorded more instances of student work on display and references to past activity by the teacher or students.

Direct evidence of career education consisted of observing infusion into school subjects, as exemplified by teacher references to (1) careers, work; (2) student self-concept; and/or (3) self-analysis of student personal likes, ambitions, etc., with respect to a given occupation.

Data from those observations are presented in Table 5.9. Those data show that observations in all grades, across all subjects, yielded:

- References to careers in 33.6% of the target school classes and 21.9% of the non-target school classes
- References to student self-concept in 16.3% of the target school classes and 13.2% of the non-target classes
- References to self-analysis regarding specific occupations in 4.7% of the target classes and 1.4% of the non-target classes.

Since affective instruction is part of the general model for career education, the evaluation observers were alert to classroom references or instructional activities on these topics: (1) Attitude toward self and others; (2) Connections among home-school-and society; and (3) Value clarification, regarding suitability of career choices.

The recorded observations across all grades in both target and non-target schools are summarized in Table 5.10. Those data show that the observations yielded the following :

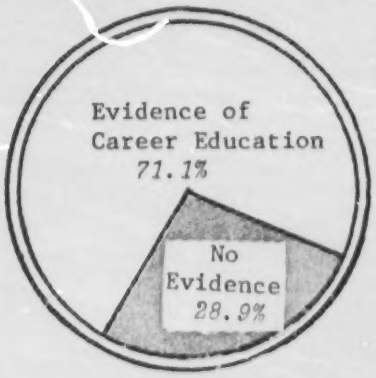
- References to Attitude Toward Self and Others in 42.8% of target school observations and in 23.9% of the non-target school observations
- References to Connections Among Home-School-Society in 21.9% of target school observations, compared with 14.5% of non-target school observations

Figure 5.2:
UNOBTRUSIVE MEASURES OF CAREER-WORLD OF WORK INSTRUCTION OBSERVED IN TARGET AND NON-TARGET SCHOOLS, FREQUENCIES AND PERCENTS

TARGET SCHOOLS

No. Observations

387



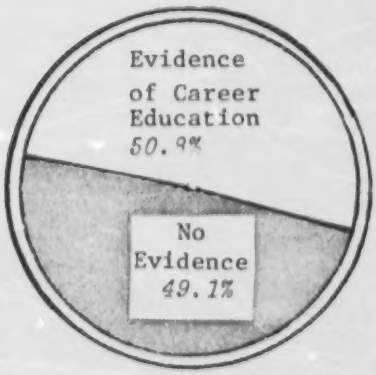
TYPE EVIDENCE

Item	N	%
•Bulletin Boards	193	48
•Work in Progress	87	22
•Student Work Displayed	47	12
•Kits in Use	21	5
•Teacher/Student Reference to Activity	36	9
•Other	21	5

NON-TARGET SCHOOLS

No. Observations

346



TYPE EVIDENCE

Item	N	%
•Bulletin Boards	98	40
•Work in Progress	52	21
•Student Work Displayed	38	16
•Kits in Use	2	1
•Teacher/Student Reference to Activity	28	11
•Other	27	11

TABLE 5.9:
OBSERVED CLASSROOM REFERENCES TO CAREER-SELF TOPICS OBSERVED
IN TARGET AND NON-TARGET SCHOOLS, BY GRADE LEVELS

GRADE LEVEL	TARGET SCHOOL OBSERV.	NON-TARGET SCHOOL OBSERV.	CAREER TOPICS				SELF-CONCEPT				SELF-CAREER ANALYSIS			
			TARGET		NON-TARGET		TARGET		NON-TARGET		TARGET		NON-TARGET	
			NO.	PCT.	NO.	PCT.	NO.	PCT.	NO.	PCT.	NO.	PCT.	NC.	PCT.
K	30	32	7	*23.3*	11	*34.3*	5	*16.7*	6	*18.8*	1	*3.3*	0	*0.0*
1	59	43	20	*33.9*	7	*16.3*	9	*15.3*	9	*20.9*	2	*3.4*	1	*2.3*
2	48	29	15	*31.3*	11	*37.9*	10	*20.8*	4	*13.8*	2	*4.2*	1	*3.4*
3	34	35	14	*41.2*	7	*20.0*	8	*23.5*	4	*11.4*	1	*2.9*	0	*0.0*
4	49	50	25	*51.0*	10	*20.0*	10	*20.4*	7	*14.0*	1	*2.0*	0	*0.0*
5	43	46	12	*27.9*	9	*19.6*	5	*11.6*	5	*10.9*	1	*2.2*	0	*0.0*
6	40	43	13	*32.5*	6	*13.9*	3	*7.5*	3	*6.9*	1	*2.5*	0	*0.0*
7	38	36	11	*28.9*	9	*25.0*	7	*18.4*	5	*13.9*	5	*13.2*	1	*2.8*
8	46	32	13	*28.3*	6	*18.8*	6	*13.0*	3	*9.4*	4	*8.6*	2	*6.3*
TOTAL	387	346	130	*33.6*	76	*21.9*	63	*16.3*	46	*13.2*	18	*4.7*	5	*1.4*

TABLE 5.18:
DIFFERENCES IN PRINCIPALS' RATINGS OF
SELECTED ASPECTS OF THE PROGRAM, BY PERCENT

Item	Type School	Great Ext. 5	4	Avg. 3	2	Not At All 1	Omits	Significance of Difference
1. Primary Grade Implementation	Target	14.	29.	43.	14.		7.	χ^2=3.35
	Non-Target		20.	40.	33.		7.	
2. Intermediate Grade Implementation	Target	14.	36.	43.	7.		7.	χ^2=5.45
	Non-Target		13.	67.	13.	7.		
		Clear 5	4	Avg. 3	2	Not Clear 1	Omits	
3. Communication to Principal	Target	21.	50.	14.	7.	7.	7.	χ^2=10.89**
	Non-Target	7.	40.	40.	7.			
4. Communication to Teachers	Target	29.	36.	29.		7.	7.	χ^2=5.82
	Non-Target	7.	27.	40.	7.			
		Often 5	4	Occ. 3	2	Never 1	Omits	
5. Teacher Use of Elementary Career Educ. Curric. Guide	Target	27.	29.	21.	14.		14.	χ^2=8.10*
	Non-Target		20.	60.			20.	
6. Teacher Development of Original Career Ed. Lessons	Target	21.	36.	29.	7.		14.	χ^2=1.09
	Non-Target	7.	40.	33.	7.		13.	
		Great Ext. 5	4	Avg. 3	2	None 1	Omits	
7. Real Help Provided by Project Staff	Target	43.	14.	36.	7.		7.	χ^2=13.83***
	Non-Target		7.	27.	47.	20.		

Target School Principals N = [illegible]
Non-Target School Principals N = 15

* Difference between schools measureably significant at P = < .05
** Difference between schools measureably significant at P = < .025
*** Difference between schools measureably significant at P = < .005

Changes From Fall to Spring.

The ratings assigned to aspects of the program by principals during the Fall and Spring interviews were analyzed to note whether any changes had occurred. The technique used was MacNemar's Test For the Significance of Changes.

Four types of change between Fall and Spring ratings were identified: (1) Positive to Negative; (2) Positive to Positive; (3) Negative to Negative; and (4) Negative to Positive. Principals' ratings were reviewed for each item and classified under one of the change categories.

The results of the analysis are shown in Table 5.19. The data show that a significant change from negative to positive ratings was registered for non-target principals for the item, "teachers' utilization of instructional media." Significant changes from negative to positive ratings were registered for target school principals on the items:

- Teachers' utilization of classroom guest speakers
- Teachers' utilization of stimulations
- Teachers' utilization of student projects

Project Outcomes.

In concluding the interviews, the principals were asked to respond to a series of four questions on the outcomes from the career education project. The responses are summarized in Table 5.20.

The summary shows that: (1) 86% of target school principals believed students benefitted from Project ICE, compared with 73% for the non-target school principals; (2) 93% of the target school principals reported favorable feed-back on career education from teachers, compared with 80% of non-target school principals; (3) 43% of the target school principals reported receiving favorable feed-back from parents, compared with 33% of non-target school principals; and (4) 86% of target school principals reported that they would recommend teachers not now involved in career education become involved, or all teachers were involved, compared with 80% of non-target principals who reported they would recommend that teachers in their school become involved with the program as soon as possible.

Open-Ended Comments, Direction.

The principals' replies to the open-ended section of the interview were content-analyzed and classified as being positive, neutral, or negative in tone and direction. Below is a summary of this mode of analysis:

	No. of Comments	Mean	Positive	Neutral	Negative
Target	162	11.6	133 *(82.1%)*	7 *(4.3%)*	22 *(13.5%)*
Non-Target	125	8.3	71 *(56.8%)*	14 *(11.2%)*	40 *(32.0%)*

The data above show that (1) target school principals made a greater number of comments on the average; (2) about 82% of the target school principals' comments were positive in tone, compared with about 57% for the non-target principals; and (3) only about 14% of the target school principals' comments were negative in nature, compared with 32% for the non-target school principals.

Conclusion: Principals' Viewpoints.

The preponderance of the data presented in measurement of this objective indicates that principals in the target schools considered Project ICE beneficial. Furthermore, their attitude appeared to be one of increasing support. Therefore, the objective was considered to have been met.

Objective 1.2.1 -- Department Heads in two pilot high schools will demonstrate support for the project through assisting the curriculum writers in: Identifying areas for career education infusion; Transmitting information of the project to classroom teachers; Recruiting teachers to provide ideas and private test curricula; and Scheduling and Monitoring the private testing.

This objective was met only partially, to a limited extent.

It was mentioned earlier in this report that high school department heads were approached too late in the school year to impact upon the high school program, according to the regular schedule. Preceding from that point, it was observed by the evaluator at meetings, and it was reported to the evaluator by project curriculum writers, that cooperation and support from the high school department heads was variable.

Some helped curriculum writers to identify appropriate areas for production of career education curricula, others did not. Some transmitted information of the project, others did not. Few, if any, department heads assisted in recruiting teachers to provide ideas and pilot test curricula. All department heads at least sent written copies of career education curricula to teachers in their departments for review. Some insisted upon a return with comments, others did not.

TABLE 5.10:
OBSERVED INSTRUCTION AIMED AT AFFECTIVE OUTCOMES
IN TARGET AND NON-TARGET SCHOOLS,
FREQUENCIES AND PERCENTS

GRADE LEVEL	TARGET SCHOOL OBSERV.	NON-TARGET SCHOOL OBSERV.	ATTITUDE TOWARD SELF AND OTHERS				CONNECTION AMONG HOME-SCHOOL-SOCIETY				CLARIFYING VALUES			
			TARGET		NON-TARGET		TARGET		NON-TARGET		TARGET		NON-TARGET	
			NO.	PCT.	NO.	PCT.	NO.	PCT.	NO.	PCT.	NO.	PCT.	NO.	PCT.
K	30	32	7	*23.3*	14	*43.8*	5	*16.7*	8	*25.0*	4	*13.3*	2	*6.3*
1	59	43	34	*57.6*	16	*37.2*	15	*25.4*	9	*20.9*	2	*3.4*	4	*9.3*
2	48	29	21	*43.8*	10	*34.5*	12	*25.0*	3	*10.3*	2	*4.2*	1	*3.4*
3	34	35	17	*50.0*	6	*17.1*	8	*23.5*	1	*2.9*	3	*8.8*	1	*2.9*
4	49	50	23	*46.9*	8	*16.0*	14	*28.5*	5	*10.*	4	*8.2*	2	*4.0*
5	43	46	16	*37.2*	8	*17.4*	6	*13.9*	6	*13.0*	1	*2.3*	2	*4.3*
6	40	43	15	*37.5*	5	*11.6*	6	*15.0*	6	*13.9*	2	*5.0*	3	*6.9*
7	38	36	14	*36.8*	6	*16.7*	13	*34.2*	7	*19.4*	4	*10.5*	8	*22.2*
8	46	32	19	*41.3*	10	*31.2*	6	*13.0*	5	*15.6*	1	*2.1*	5	*15.6*
Total:	387	346	166	*42.8*	83	*23.9*	85	*21.9*	50	*14.5*	23	*5.9*	28	*8.1*

5.18

*References to Values Clarification in 5.9% of target school observations and in 8.1% of non-target observations.

Observed References to Career Topics.

An analysis was made of observed classroom references to career topics in target and non-target schools, to determine whether there were similar or different patterns in career program-delivery within the two types of schools.

The observed references to careers made at each grade level in each school subject observed was recorded and summarized for analysis. The data for the target schools is shown in Table 5.11 and in Table 5.12 for non-target schools.

Target School Patterns.

The data in Table 5.11 show that career references were observed in about two-thirds of the observations of Grade 3 classrooms. At other grades, career references were seen about one time in three (at Grade 1); one-out-of every-two observations at Grade 4; and two-out-of-every-five observations at Grades 7 and 8.

Overall, 167 of 387 observations in target schools yielded career-references, for a "hit rate" of 43.2 percent. In social studies classes, 79% of the observations yielded career references (23 of 29); in langauge arts classes, 31% of the observations yielded in career references (20 of 65); art classes and health, physical education, spelling, etc. resulted in observed career references in 56% and 54% of the observations, respectively.

Non-Target School Patterns.

The data in Table 5.12 show that about 40% of the observation in Kindergarten and Grades 2 and 7 resulted in recorded references to careers. About 30% of the natural observations in Grades 3,4,5,and 8 yielded career references.

Overall, 106 of 346 observations in non-target schools resulted in recording career references, for a "hit rate" of 30.6 percent. In social studies classes, 29% of the observations yielded career references (8 of 27); in language arts classes, 15% (10 of 65) observations resulted in career references being recorded; observations of art and music and "other" classes yielded 57% and 49% references, respectively.

Direct and Indirect References.

During the observations the external evaluation observation team noted a qualitative difference among the career-education-related activities. In some cases the career references and instructional activities were concentrated, probing, indepth educational experiences; while in others, they were diffuse, "single-event" experiences, merely providing surface coverage.

An analysis was made of the qualitative differences in career activities observed in target and non- target schools.

TABLE 5.11:
REFERENCES TO CAREERS OBSERVED
IN TARGET SCHOOLS, BY SUBJECTS AND GRADES

GRADE LEVELS		MATH	SCIENCE	LANG. ARTS	SOCIAL STUDIES	READING	ART/ MUSIC	OTHER*	TOTAL OBS.	TOTAL REFERENCES	% TOTAL REF./OBS.
K	N Obs.			1		5	4	20	30	10	33.3
	N Ref.			1		1	2	6			
1	N Obs.	9		5	1	23	2	19	59	21	35.5
	N Ref.	1			1	11	1	7			
2	N Obs.	3	1	9	3	17	4	11	48	19	39.5
	N Ref.	2		2	3	3	5	4			
3	N Obs.	5		5	1	15	2	6	34	23	67.6
	N Ref.	3		2	1	11	1	5			
4	N Obs.	16		6	3	11		13	49	26	53.1
	N Ref.	4		2	4	7		9			
5	N Obs.	10	1	8	6	7	1	10	43	16	37.2
	N Ref.				6	5		5			
6	N Obs.	9		15	3	4	2	7	40	15	37.5
	N Ref.	1		7	3			4			
7	N Obs.	7	2	6	6	10		7	38	17	44.7
	N Ref.	1	3	2	2	4		5			
8	N Obs.	8	3	10	6	11	1	7	46	20	43.5
	N Ref.	1		4	3	3		9			
N Observations		67	7	65	29	103	16	100	387		
% Ref./Subject		13	3	20	23	45	9	54		167	43.2

*Other = Spelling, physical education, penmanship, health, combination activities in Primary Grades, etc.

TABLE 5.12:
REFERENCES TO CAREERS IN SUBJECT AREAS,
OBSERVED IN NON-TARGET SCHOOLS, BY SUBJECTS AND GRADES

GRADE LEVELS		MATH	SCIENCE	LANG. ARTS	SOCIAL STUDIES	READING	ART/ MUSIC	OTHER*	TOTAL OBS.	TOTAL REFERENCES	% TOTAL REF./OBS.
K	N Obs.			1	2	6	1	22	32		40.6
	N Ref.					6		7		13	
1	N Obs.	3	1	7	1	22	1	8	43		25.6
	N Ref.	2	1	2		4		2		11	
2	N Obs.	7		3	1	9		9	29		41.4
	N Ref.			1		7		4		12	
3	N Obs.	3	1	5	1	12		13	35		31.4
	N Ref.			1		5		5		11	
4	N Obs.	17		5	5	10	2	11	50		30.0
	N Ref.	1			5	2	2	5		15	
5	N Obs.	13	2	13	5	8	1	4	46		28.3
	N Ref.	1			3	1	2	6		13	
6	N Obs.	11	2	15	4	8		3	43		16.2
	N Ref.		2	2		2		1		7	
7	N Obs.	9	5	7	3	4	1	7	36		41.6
	N Ref.		5			2		8		15	
8	N Obs.	7	1	9	5	5	1	4	32		28.1
	N Ref.	1		4		2		2		9	
Observations		70	12	65	27	84	7	81	346		30.6
Ref./Subject		5	8	10	8	31	4	40		106	

*Other = Spelling, physical education, penmanship, combination activities.

For this set of analyses, career education activities,or classroom references which were carried out at more advanced or complex levels were termed *direct references;* those which were at the "bulletin board or single event" levels, were termed *indirect references.*

Career Topics.

The first analysis was of references to career topics, including working conditions, training requirements, salary ranges, worker activity, etc. The data are summarized in Table 5.13 for both target and non-target schools.

The data show that the largest percent of career references in both types of schools occurred in reading classes and "other"classes. However, in target schools proportionately greater percentages of references to careers were made in social studies and language arts classes.

In target schools there were (1) a greater number of total references and (2) a greater number of direct references. A Chi-Square analysis indicated that the number of both types of reference was significantly greater in target schools.

Self-Concept.

The second analysis was of references to self-concept, including self-image and capabilities. The data are summarized in Table 5.14 for target and non-target schools.

The data show that the largest percentage of classroom references to self-concept topics were in "other" and reading classes for both types of schools. However, in target schools a larger proportion were recorded in language arts and social studies classes than in non-target schools.

Target school teachers made a greater number of both direct and indirect references than non-target teachers. A Chi-Square analysis indicated that the number of direct references recorded for target schools was significantly greater than for non-target schools. The difference between schools in indirect comments was not significantly different.

Self Analysis, Toward Career Choices.

The third analysis was of student self-analysis, including assessment of one's strengths and weaknesses, likes and dislikes, toward making tentaive career selections. The data on references to this topic made in target and non-target schools are summarized in Table 5.15.

The data show first that fewer references were made to this topic in both types of school, compared with references to careers and self-concept. Second, the data show that target school teachers infused this topic into art and social studies, while non- target teachers did not. On the other hand,

TABLE 5.13:
AN ANALYSIS OF RECORDED CLASSROOM REFERENCES
TO CAREER TOPICS, INFUSED IN SCHOOL SUBJECTS,
TARGET AND NON-TARGET SCHOOLS

CAREERS

	TARGET				NON-TARGET			
	Type Reference				Type Reference			
Subjects	Direct	Indirect	Total	Pct.	Direct	Indirect	Total	Pct.
Math	8	4	12	*9.2*	3	1	4	*5.3*
Science	2	1	3	*2.2*	5	1	6	*7.9*
Lang. Arts	13	7	20	*15.3*	4	0	4	*5.3*
Soc. St.	13	3	16	*12.2*	6	0	6	*7.9*
Art	3	1	4	*3.1*	1	0	1	*1.3*
Music	0	0	0	*0.0*	0	0	0	*0.0*
Reading	28	9	37	*28.2*	18	9	27	*35.5*
Penmanship	1	0	1	*0.8*	0	0	0	*0.0*
Other	31	7	38*	*29.0*	22	6	28*	*36.8*
Total	99	32	131	*100.0*	59	17	76	*100.0*

ANALYSIS

	Target	Non-Target	χ^2	Significance Level
Direct	99	59	10.12	<.005
Indirect	32	17	4.58	<.025

*"Other" includes Health, Physical Education, etc. Most primary activities were classified here.

TABLE 5.14:
AN ANALYSIS OF RECORDED CLASSROOM REFERENCES
TO STUDENT SELF-CONCEPT, INFUSED IN SCHOOL SUBJECTS,
TARGET AND NON-TARGET SCHOOLS

	TARGET				NON-TARGET			
	Type Reference				Type Reference			
Subjects	Direct	Indirect	Total	Pct.	Direct	Indirect	Total	Pct.
Math	5	4	9	*14.1*	0	3	3	*6.7*
Science	0	0	0	*0*	0	2	2	*4.4*
Lang. Arts	7	1	8	*12.5*	1	1	2	*4.4*
Soc. St.	3	4	7	*10.9*	1	0	1	*2.2*
Art	0	1	1	*1.5*	0	0	0	*0*
Music	0	0	0	*0*	0	0	0	*0*
Reading	10	4	14	*21.8*	14	7	21	*46.7*
Penmanship	0	0	0	*0*	0	0	0	*0*
Other	16	9	25	*39.1*	10	6	16	*35.6*
Total	41	23	64	*99.9*	26	19	45	*100.0*

ANALYSIS

	Target	Non-Target	χ^2	Significance Level
Direct	41	26	*3.36*	*<.05*
Indirect	23	19	*0.38*	N.S.

TABLE 5.15:
AN ANALYSIS OF RECORDED CLASSROOM REFERENCES
TO SELF/CAREER-CHOICE, INFUSED IN SCHOOL SUBJECTS,
TARGET AND NON-TARGET SCHOOLS

	TARGET				NON-TARGET			
	Type Reference				Type Reference			
Subjects	Direct	Indirect	Total	Pct.	Direct	Indirect	Total	Pct.
Math	0	0	0		1	0	1	*20.0*
Science	0	0	0		0	0	0	
Lang. Arts	3	0	3	*16.7*	1	0	1	*20.0*
Soc. St.	2	0	2	*11.1*	0	0	0	
Art	2	0	2	*11.1*	0	0	0	
Music	0	0	0		0	0	0	
Reading	5	0	5	*27.8*	1	0	1	*20.0*
Penmanship	0	0	0		0	0	0	
Other	5	1	6	*33.3*	2	0	2	*40.0*
Total	17	1	18	*100.0*	5	0	5	*100.0*

ANALYSIS

	Target	Non-Target	χ^2	Significance Level
Direct	17	5	*6.54*	*<.01*
Indirect	1	0	*1.0*	N.S.

non-target teachers infused references to this topic into math.

In target classrooms, there were more direct and indirect references to student self-analysis than in non-target schools. A Chi-Square Analysis showed that the number of target school direct references was greater than non-target school references to extent greater than could have occurred by chance alone.

Summary

Data from both sources (teacher self-reports and external observation) indicated that there was a substantial amount of career education infusion.

Teachers reported infusing about 2700 separate activited in all subjects in April and May, 1976. Moreover, a comparison with past teacher reports indicated that the trend was toward increased infusion in all subjects, particularly in social studies and language arts and reading.

Impartial observers, visiting both target and non-target schools on a random-sample basis, noted career-related instruction in both target and non-target schools. In both types of schools they observed for indirect and direct evidence of career education infusion.

Indirect evidence was observed in about 70 percent of their target school observations and in about 50 percent of their non-target observations.

Direct observation indicated that in target schools more classroom references to career topics were delivered at certain grade levels, while in non-target schools, a smaller percentage of references were made at nearly every grade level. Moreover, greater infusion in the subjects, social studies and language arts, was noted in target schools.

A significantly greater number of direct (advanced, extended treatment) references were observed in target schools. The differences were of sufficient magnitude that they could not have occurred by chance.

It was concluded, therefore, that infusion was occurring in the target schools, and that it differed from that occurring in non-target schools in kind as well as degree. The results suggest that the target school treatment (inclass assistance) made a difference in the amount and type of career education delivered to students.

It should be reiterated that there was a substantial amount of variation among teachers in delivery of career education instruction. While more than 90 percent of target school teachers provided some instruction in career education during the year, not all teachers did so on a regular basis. Moreover, there appeared to be differences within schools and grades on the specific clusters, occupations, and career topics on which instruction was provided.

Objective 1.1.9-- Principals in target schools will rate Project ICE as beneficial. They will display supportive attitudes which will increase, or at least not decrease.

This objective was measured by principal interviews, conducted in Fall, 1975 and Spring, 1976. To determine differential effects from the target school treatment versus the non-target treatment, all target and non-target school principals were interviewed.

An interview schedule consisting of open-ended questions and structured rating scales was constructed for this evaluation study. The interviews were conducted by the evaluator and two assistants, trained in advance by the evaluator.

A summary of the Fall interviews was given in interim evaluation report 1. In this report, the Spring interviews are summarized and comparisons made. The informants were 14 of 15 target school principals and 15 of 15 non-target school principals.

Open-Ended Comments.

The first portion of the interview consisted of responses to open-ended questions on these topics:

- Present Attitude Toward the Idea of Career Education
- Management Problems Associated with Career Education
- Contact Between the School and the Career Education Project
- Changes in Emphasis Noted for Careers, Self-Concept, Relation Among Home-School-Society
- Career Education at All Grades or Certain Grades

The principals' replies were recorded, the theme for each reply was abstracted, and comments with similar themes were grouped together for analysis. The results of this are presented in Table 5.16.

Target principals were very favorable toward the idea of career education and half considered it to be essential to the elementary school. A substantial percentage of respondents wished it made clear that it was not a new idea in the schools, but had been going on before the project.

Non-target principals were favorable toward the idea, but were disappointed that they had not received more direct help from the project. It appeared that they did not fully realize that the design for Project ICE specified that the project would only "start the ball rolling."

TABLE 5.16:
PRINCIPALS' VIEWPOINT ON THE
CAREER EDUCATION PROJECT

Item 1: What is your present attitude toward the idea of career education?

TARGET PRINCIPALS	NON-TARGET PRINCIPALS
(a) Positive, favorable. Always favored idea. Favor idea, BUT it's not new. [13]	(a) Positive toward idea and philosophy of career education. [10]
(b) Career Education is essential, necessary. It was too long in coming. Should be part of schedule, woven into curriculum [7]	(b) Career education is a must. Should be part of school program. Schools have an obligation to make alternatives available to students. [5]
(c) Very satisfied with the Project. Staff were extremely helpful. [6]	(c) A good idea BUT (1) more responsibility on schools, (2) project must realize need for follow-up, (3) more must be done to infuse it in regular subjects. [3]
(d) It can be easily incorporated. [2]	
(e) Career education is beneficial for students. [1]	
(f) Negative Attitude. [1]	

Item 2: Are there any management problems connected with career education for the Principal? For teachers?

TARGET PRINCIPALS	NON-TARGET PRINCIPALS
(a) No problems for Principal or teachers. Don't know of any; none conveyed [25]	(a) No Principal or teacher problems. Teachers haven't voiced any. [5]
(b) Teacher problems. Testing, arranging trips, leaving room for meetings with coordinator. [3]	(b) Principal and teacher problems. Time for in-service training, released time for planning, etc., trying to infuse career education without teachers' feeling it is more work. [5]

TABLE 5.16 (continued):

TARGET PRINCIPALS	NON-TARGET PRINCIPALS
(c) Principals' Problems. Lack of money for field trips. [1]	(c) Record Keeping. Monitoring, time time involvement, testing and forms. [4]
	(d) Principal trying to evaluate what is happening. [1]

Item 3: Please describe the contact between this school and the career education project.

TARGET PRINCIPALS	NON-TARGET PRINCIPALS
(a) Contact Regular. Weekly phone or mail. Staff visit regularly (2-3 times/month). [12]	(a) Contact infrequent, or nonexistent. Only building coordinators had contact with project. [14]
(b) Contact Sporadic. Not as much as other schools [2]	
(c) Quality of contact is good. Effective, helpful to teachers. Workshops are worthwhile. Teachers are happy to see staff when they come to building. Supportive. [13]	

Item 4: Have you noticed any change (increase or decrease) this year in teachers' emphasis on Careers and the World of Work, Student Attitudes-self concept, the relation among home, school, and society?

TARGET PRINCIPALS	NON-TARGET PRINCIPALS
CAREERS	CAREERS
(a) Great or Definite Increase. Students regularly get library material on careers. Increase especially noticed in upper grades. [11]	(a) Increase or Slight Increase. Varies by teachers. There seem to be more guest speakers and primary field trips. [10]
(b) Slight (or some) increase. [2]	(b) Can't say/Don't know. [4]
(c) Difficult to say. [1]	(c) No change. [1]

TABLE 5.16(continued):

TARGET PRINCIPALS	NON-TARGET PRINCIPALS
STUDENT ATTITUDE	STUDENT ATTITUDE
(a) Difficult to assess. [3]	(a) Can't say; Don't know [4]
(b) Change for the better. Seems to be on increase; an average amount of increase. Increase awareness. A definite increase. [6]	(b) An increase, or some increase. [6]
(c) The school had its own workshop, too, besides the Project. [1]	(c) Increase, but due to school's own program. [2]
(d) No change was noted. [3]	(d) No Change. [3]
HOME-SCHOOL-SOCIETY	HOME-SCHOOL-SOCIETY
(a) Great increase - increased awareness. Positive effects. Kids are talking about it. [7]	(a) Increase in emphasis. [2]
(b) About the same. No change; not sure. [4]	(b) Increase, but due to school's own program. [2]
(c) This school always had good parent relations. Students are talking to parents about school. Effect not due to career education. [2]	(c) Can't say. [2]
	(d) No Change. [4]

Item 5: Would you say that most teachers at all grades are bringing career education into their teaching, or is it more prevalent in certain grades?

TARGET PRINCIPALS	NON-TARGET PRINCIPALS
(a) Prevalent in all grades. But some teachers are more enthusiastic than others. [7]	(a) Prevalent all grades, or most grades. [2]
(b) Effort is scattered. [3] Middle and upper grades. [4] Primary grades, especially Social Studies - Community helpers. [4]	(b) Uneven. Some at each grade; depends on teachers. [6]
	(c) Certain grades. Upper Grades [2] Intermediate and Upper [3] Primary grades [2]

TABLE 5.16 (continued):

Item 6: Have there been any effects or outcomes for this school that you would attribute to Project Implementing Career Education (ICE)?

TARGET PRINCIPALS	NON-TARGET PRINCIPALS
(a) Increased student and teacher awareness. Much talk and information about careers, student work, displays [6]	(a) Positive in those classrooms that had activities geared to career education. More teachers aware due to observer's visits, curriculum guide received. More classroom bulletin boards. [4]
(b) More community and parent involvement. Adults coming to school to speak who never came before. Indirect, positive benefits. [3]	(b) Students exposed to information. Students thinking about jobs and careers. [2]
(c) Students know and understand more about work and society. Students' ideas were influenced. Students ask to do projects on their own. [3]	(c) More speakers coming to talk to students. [1]
(d) None; no effects observed. [6]	(d) None [5]

Non-target principals cited more management problems connected with career education. The major types of problems named by target principals centered on testing, field trips, substitutes while the teacher attended meetings. Non-target principals, in addition to these, cited teacher motivation.

Target principals characterized contacts with the project as regular and positive. Of course, contact with non-target schools was infrequent.

Principals at both types of schools noted an increase in instructional emphasis on careers, self-concept, and realting school to society. Target school principals were more certain of increases in their schools.

Half the target principals reported that career education was taking place on all grade levels, but only 13 percent of non- target principals stated that this was occurring. The balance of principals in both types of schools reported a scattered, or uneven effort. In some schools, the major impact was seen at the upper grades, at others the middle or primary grades.

Target school principals were more willing to attribute positive student, teacher, and community outcomes to career education than non-target principals. The latter restricted their remarks to those classrooms where they knew career education was taking place. No effects were reported by 43 percent of the target principals and by 33 percent of the non-target principals.

Instructional Approaches.

The principals were asked to rate the extent to which several instructional approaches to career education had been used in their schools during the year. The ratings and an analysis for significance of difference between target and non-target schools are shown in Table 5.17.

The data show that a significantly greater use was made in target schools of the following approaches:

- Media, Films, Filmstrips
- Classroom Guest Speakers
- World-of-Work Field Trips
- Commercially-Published Instructional Materials

Aspects of the Program.

The principals rated various aspects of the career education program according to a 5-point Likert-type scale. The ratings are summarized in Table 5.18.

Significant differences, favoring the target schools, were obtained for the following:

- Quality of Communication to the Principal
- Teacher Use of the Career Education Curriculum Guide
- Real Help Provided by Project Staff

No significant differences were obtained for principal ratings of:

- Primary and Intermediate Grade Implementation
- Communication to Teachers
- Teacher Development of Original Career Education Curricula

TABLE 5.17:

PRINCIPALS' RATINGS OF THE EXTENT OF UTILIZATION OF SELECTED INSTRUCTIONAL APPROACHES TO CAREER EDUCATION

Item	Type School		Great Ext. 5	4	Avg. 3	2	Not At All 1	χ^2	Significance Level
1. Media; Films, Filmstrips, loops, tapes, etc.	Target	N	1	4	9				
		%	7	29	64			4.93	<.05
	Non-Target	N		6	6	3			
		%		40	40	20			
2. Classroom Guest Speakers, discussing occupational roles	Target	N	5	4	2	3			
		%	36	29	14	21		6.93	<.025
	Non-Target	N		3	8	2	2		
		%		20	53	13	13		
3. Individualized Kits	Target	N		2	7	3	1		
		%		14	50	21	7	3.79	NS
	Non-Target	N		1	4	3	5		
		%		7	27	20	33		
4. Reference Books: Occupational Dictionaries, etc.	Target	N		2	7	4	1		
		%		14	50	19	7	4.61	NS
	Non-Target	N		1	4	4	6		
		%		7	27	27	40		
5. Simulations; Role Playing	Target	N		5	5	4	0		
		%		36	36	29		3.42	NS
	Non-Target	N		2	6	5	2		
		%		13	40	33	13		
6. World of Work Field Trips	Target	N	3	3	6	1	1		
		%	21	21	43	7	7	7.97	<.05
	Non-Target	N		3	5	6	1		
		%		20	33	40	7		
7. Student Projects, e.g., *Reports *Artwork *Stories	Target	N	1	7	6				
		%	7	50	43			4.32	NS
	Non-Target	N		4	9	2			
		%		27	60	13			
8. Shadowing and Interviewing workers at their jobs	Target	N		2	4	5	3		
		%		14	29	36	21	1.33	NS
	Non-Target	N		1	3	5	6		
		%		7	20	33	40		
9. Commercially-published instructional materials.	Target	N	1	6	7				
		%	7	43	50			6.46	<.05
	Non-Target	N		2	10	3			
		%		13	67	20			

Target Principals N = 14
Non-Target Principals N - 15

TABLE 5.17:

PRINCIPALS' RATINGS OF THE EXTENT OF UTILIZATION OF SELECTED INSTRUCTIONAL APPROACHES TO CAREER EDUCATION

Item	Type School		Great Ext. 5	4	Avg. 3	2	Not At All 1	χ^2	Significance Level
1. Media; Films, Filmstrips, loops, tapes, etc.	Target	N	1	4	9				
		%	7	29	64			4.93	<.05
	Non-Target	N		6	6	3			
		%		40	40	20			
2. Classroom Guest Speakers, discussing occupational roles	Target	N	5	4	2	3			
		%	36	29	14	21		6.93	<.025
	Non-Target	N		3	8	2	2		
		%		20	53	13	13		
3. Individualized Kits	Target	N		2	7	3	1		
		%		14	50	21	7	3.79	NS
	Non-Target	N		1	4	3	5		
		%		7	27	20	33		
4. Reference Books: Occupational Dictionaries, etc.	Target	N		2	7	4	1		
		%		14	50	19	7	4.61	NS
	Non-Target	N		1	4	4	6		
		%		7	27	27	40		
5. Simulations; Role Playing	Target	N		5	5	4	0		
		%		36	36	29		3.42	NS
	Non-Target	N		2	6	5	2		
		%		13	40	33	13		
6. World of Work Field Trips	Target	N	3	3	6	1	1		
		%	21	21	43	7	7	7.97	<.05
	Non-Target	N		3	5	6	1		
		%		20	33	40	7		
7. Student Projects, e.g., *Reports *Artwork *Stories	Target	N	1	7	6				
		%	7	50	43			4.32	NS
	Non-Target	N		4	9	2			
		%		27	60	13			
8. Shadowing and Interviewing workers at their jobs	Target	N		2	4	5	3		
		%		14	29	36	21	1.33	NS
	Non-Target	N		1	3	5	6		
		%		7	20	33	40		
9. Commercially-published instructional materials.	Target	N	1	6	7				
		%	7	43	50			6.46	<.05
	Non-Target	N		2	10	3			
		%		13	67	20			

Target Principals N = 14
Non-Target Principals N - 15

TABLE 5.18:
DIFFERENCES IN PRINCIPALS' RATINGS OF
SELECTED ASPECTS OF THE PROGRAM, BY PERCENT

Item	Type School	Great Ext. 5	4	Avg. 3	2	Not At All 1	Omits	Significan of Differe
1. Primary Grade Implementation	Target	14.	29.	43.	14.		7.	χ^2=3.35
	Non-Target		20.	40.	33.		7.	
2. Intermediate Grade Implementation	Target	14.	36.	43.	7.		7.	χ^2=5.45
	Non-Target		13.	67.	13.	7.		
		Clear 5	4	Avg. 3	2	Not Clear 1	Omits	
3. Communication to Principal	Target	21.	50.	14.	7.	7.	7.	χ^2=10.89**
	Non-Target	7.	40.	40.	7.			
4. Communication to Teachers	Target	29.	36.	29.		7.	7.	χ^2=5.82
	Non-Target	7.	27.	40.	7.			
		Often 5	4	Occ. 3	2	Never 1	Omits	
5. Teacher Use of Elementary Career Educ. Curric. Guide	Target	21.	29.	21.	14.		14.	χ^2=8.10*
	Non-Target		20.	60.			20.	
6. Teacher Development of Original Career Ed. Lessons	Target	21.	36.	29.	7.		14.	χ^2=1.09
	Non-Target	7.	40.	33.	7.		13.	
		Great Ext. 5	4	Avg. 3	2	None 1	Omits	
7. Real Help Provided by Project Staff	Target	43.	14.	36.	7.		7.	χ^2=13.83**
	Non-Target		7.	27.	47.	20.		

Target School Principals N = 14
Non-Target School Principals N = 15

* Difference between schools measureably significant at P = < .05
** Difference between schools measureably significant at P = < .025
*** Difference between schools measureably significant at P = < .005

Changes From Fall to Spring.

The ratings assigned to aspects of the program by principals during the Fall and Spring interviews were analyzed to note whether any changes had occurred. The technique used was MacNemar's Test For the Significance of Changes.

Four types of change between Fall and Spring ratings were identified: (1) Positive to Negative; (2) Positive to Positive; (3) Negative to Negative; and (4) Negative to Positive. Principals' ratings were reviewed for each item and classified under one of the change categories.

The results of the analysis are shown in Table 5.19. The data show that a significant change from negative to positive ratings was registered for non-target principals for the item, "teachers' utilization of instructional media." Significant changes from negative to positive ratings were registered for target school principals on the items:

- Teachers' utilization of classroom guest speakers
- Teachers' utilization of stimulations
- Teachers' utilization of student projects

Project Outcomes.

In concluding the interviews, the principals were asked to respond to a series of four questions on the outcomes from the career education project. The responses are summarized in Table 5.20.

The summary shows that: (1) 86% of target school principals believed students benefitted from Project ICE, compared with 73% for the non-target school principals; (2) 93% of the target school principals reported favorable feed-back on career education from teachers, compared with 80% of non-target school principals; (3) 43% of the target school principals reported receiving favorable feed-back from parents, compared with 33% of non-target school principals; and (4) 86% of target school principals reported that they would recommend teachers not now involved in career education become involved, or all teachers were involved, compared with 80% of non-target principals who reported they would recommend that teachers in their school become involved with the program as soon as possible.

Open-Ended Comments, Direction.

The principals' replies to the open-ended section of the interview were content-analyzed and classified as being positive, neutral, or negative in tone and direction. Below is a summary of this mode of analysis:

	No. of Comments	Mean	Positive	Neutral	Negative
Target	162	11.6	133 *(82.1%)*	7 *(4.3%)*	22 *(13.5%)*
Non-Target	125	8.3	71 *(56.8%)*	14 *(11.2%)*	40 *(32.0%)*

The data above show that (1) target school principals made a greater number of comments on the average; (2) about 82% of the target school principals' comments were positive in tone, compared with about 57% for the non-target principals; and (3) only about 14% of the target school principals' comments were negative in nature, compared with 32% for the non-target school principals.

Conclusion: Principals' Viewpoints.

The preponderance of the data presented in measurement of this objective indicates that principals in the target schools considered Project ICE beneficial. Furthermore, their attitude appeared to be one of increasing support. Therefore, the objective was considered to have been met.

Objective 1.2.1 -- Department Heads in two pilot high schools will demonstrate support for the project through assisting the curriculum writers in: Identifying areas for career education infusion; Transmitting information of the project to classroom teachers; Recruiting teachers to provide ideas and private test curricula; and Scheduling and Monitoring the private testing.

This objective was met only partially, to a limited extent.

It was mentioned earlier in this report that high school department heads were approached too late in the school year to impact upon the high school program, according to the regular schedule. Preceding from that point, it was observed by the evaluator at meetings, and it was reported to the evaluator by project curriculum writers, that cooperation and support from the high school department heads was variable.

Some helped curriculum writers to identify appropriate areas for production of career education curricula, others did not. Some transmitted information of the project, others did not. Few, if any, department heads assisted in recruiting teachers to provide ideas and pilot test curricula. All department heads at least sent written copies of career education curricula to teachers in their departments for review. Some insisted upon a return with comments, others did not.

TABLE 5.19
SIGNIFICANCE OF CHANGES IN PRINCIPALS' RATINGS ON THE PROJECT, FALL AND SPRING, 1975-76

Item Rated:	Type School	Type of Change +/-	+/+	-/-	-/+	χ^2	Significance Level
1. Primary grade implementation	Target	1	2	6	5	1.5	N.S
	Non-Target	0	3	12	0	0	N.S
2. Intermediate grade implementation	Target	2	3	5	4	0.17	N.S
	Non-Target	4	0	9	2	0.17	N.S
3. Communication to Principal	Target	2	3	2	3	0	N.S
	Non-Target	3	6	5	1	0.25	N.S
4. Communication to Teachers	Target	1	5	3	5	1.5	N.S
	Non-Target	2	4	8	1	0	N.S
5. Use of Curriculum Guide	Target	3	3	3	5	0.13	N.S
	Non-Target	2	1	10	2	0.25	N.S
6. Teacher develop new lessons	Target	3	3	3	5	0.13	N.S
	Non-Target	2	4	5	4	0.17	N.S
7. Help from Project	Target	3	6	3	2	0	N.S
	Non-Target	1	1	13	0	0	N.S
8. Teachers' utilization of:							
•Instructional Media	Target	2	3	7	2	0.25	N.S
	Non-Target	0	2	9	5	3.2	<.05
•Classroom guest speakers	Target	0	4	5	5	3.2	<.05
	Non-Target	2	0	10	4	1.5	N.S
•Simulations	Target	0	0	9	5	3.2	<.05
	Non-Target	0	0	13	2	0.5	N.S
•Career field trips	Target	0	3	8	3	1.3	N.S
	Non-Target	2	1	10	2	0.25	N.S
•Student Projects	Target	0	3	6	5	3.2	<.05
	Non-Target	1	1	9	4	0.8	N.S
•Career-related written materials	Target	1	1	6	6	2.3	N.S
	Non-Target	1	1	12	1	0.5	N.S

TABLE 5.20
PRINCIPALS' REPORTS ON PROJECT OUTCOMES, BY PERCENT

	Item	Type School		Responses: Yes	Don't Know / Not Sure	No	Omits
1.	Have students seemed to have benefitted from the Project?	Target	N	12	2	0	0
			%	*86.*	*14.*	*0.*	*0.*
		Non-Target	N	11	4	0	0
			%	*73.*	*27.*	*0.*	*0.*
2.	Have you had favorable feedback on the career education project from teachers in this school?	Target	N	13	0	1	0
			%	*93.*	*0*	*7.*	*0.*
		Non-Target	N	12	1	2	0
			%	*80**	*7.*	*13.*	*0.*
3.	Have you had favorable feedback from parents of students?	Target	N	6	4	4	
			%	*43.*	*29.*	*29.*	
		Non-Target	N	5	4	6	
			%	*33.*	*27.*	*40.*	
4.	Would you recommend that teachers NOT NOW involved in the career education project become involved as soon as possible?	Target	N	6		2	All Are Involved 6
			%	*43.*		*14.***	*43.*
		Non-Target	N	12	2	1	
			%	*80.*	*13.***	*7.***	

*3 Non-Target School Principals mentioned receiving negative feed-back
** Several Principals made the point that participation in the program would be voluntary.

Few, if any, department heads assisted in the scheduling and monitoring of curriculum pilot testing. First, this was done to only a limited extent due mostly to the late date by which the curricula were prepared. Second, the limited amount of pilot testing that did occur was through direct arrangements between curriculum writers and teachers in both pilot high schools.

Objective 1.2.2 -- 80% of participating teachers and department heads will provide input into curriculum construction through suggesting ideas related to their subject-matter areas.

This objective was not met. In only a few cases did high school staff suggest ideas for areas in which the curriculum writers could prepare career education materials. Primarily this input was secured in the areas of science and math. In interim evaluation report 2 it was reported that 72% of the lesson/units were written entirely the project curriculum writers, with no input or suggestions from teachers or department heads. The source for the data was the curriculum writers.

Objective 1.2.3 -- 80% of high school teachers in the private schools will demonstrate significant increases in (a) knowledge of career education and (b) will express accord with the intent of those Project ICE.

This objective was not met. Two workshops for high school teachers were scheduled by project staff, one in November, 1975 and the other in January, 1976. Attendance at these workshops was scant. Only 13 attended the November meeting, and about 60 attended the second workshop. Those who attended demonstrated the specified increment in career education and knowledge, and they expressed feelings in the direction called for by the objective. However, the number of teachers who did so was far short of the required 80% of teachers in two high schools of math, science, social studies, and communication skills.

A parenthetical note to planners of future projects: It was found to be much more difficult to attract high school teachers to Saturday workshops than elementary teachers.

Objective 1.2.4 -- 65% of the high school teachers associated with the project will trial test at least 80% of the exemplary period education lessons/units in their classrooms.

The objective was met, to a practically-significant extent.

Documentary records indicated that forty-one high school teachers trial-tested twenty-six lessons in communication skills; thirty-two teachers trial-tested twenty-six units in social studies; nineteen teachers tried out thirty-nine science units; and twenty teachers piloted forty math units.

Process and Product Assessment.

In one sense, the high school inservice component was the least successful aspect of the project. High school teachers did not receive inservice training to the extent specified. Developmental efforts between the project curriculum writers and department heads were not as straightforward as planned. The amount of teacher input into curriculum planning that was envisioned did not occur.

For the most part, these shortcomings appeared to represent over-optimistic expectations on the part of program designers, coupled with lack of knowledge of the workings of the secondary schools. However, despite these design flaws, project curriculum writers were able to produce the required number of curricula in the four subject areas, and those curricula were of generally high quality.

Section 6.0

EVALUATION FINDINGS: CURRICULUM DEVELOPMENT AND COORDINATION COMPONENT

Summarized in this section are the evaluation findings for all objectives generated for the project component, Curriculum Development and Coordination.

Objective 2.1 -- Project staff will develop a Secondary Curriculum Guide for infusing career education in high schools and, science, social studies, and communication skills. A guide will contain a minimum of 25 lesson/units in each subject area.

This objective was met. By the end of the year, the curriculum writers had exceeded the criterion number of lessons/units in all four subject areas.

However, the rate of production was variable. The lesson/units in math and science were produced at a fairly standard rate throughout the year. The curricula for social studies and communication skills, however, were substantially behind schedule on December, 1975 and March, 1976.

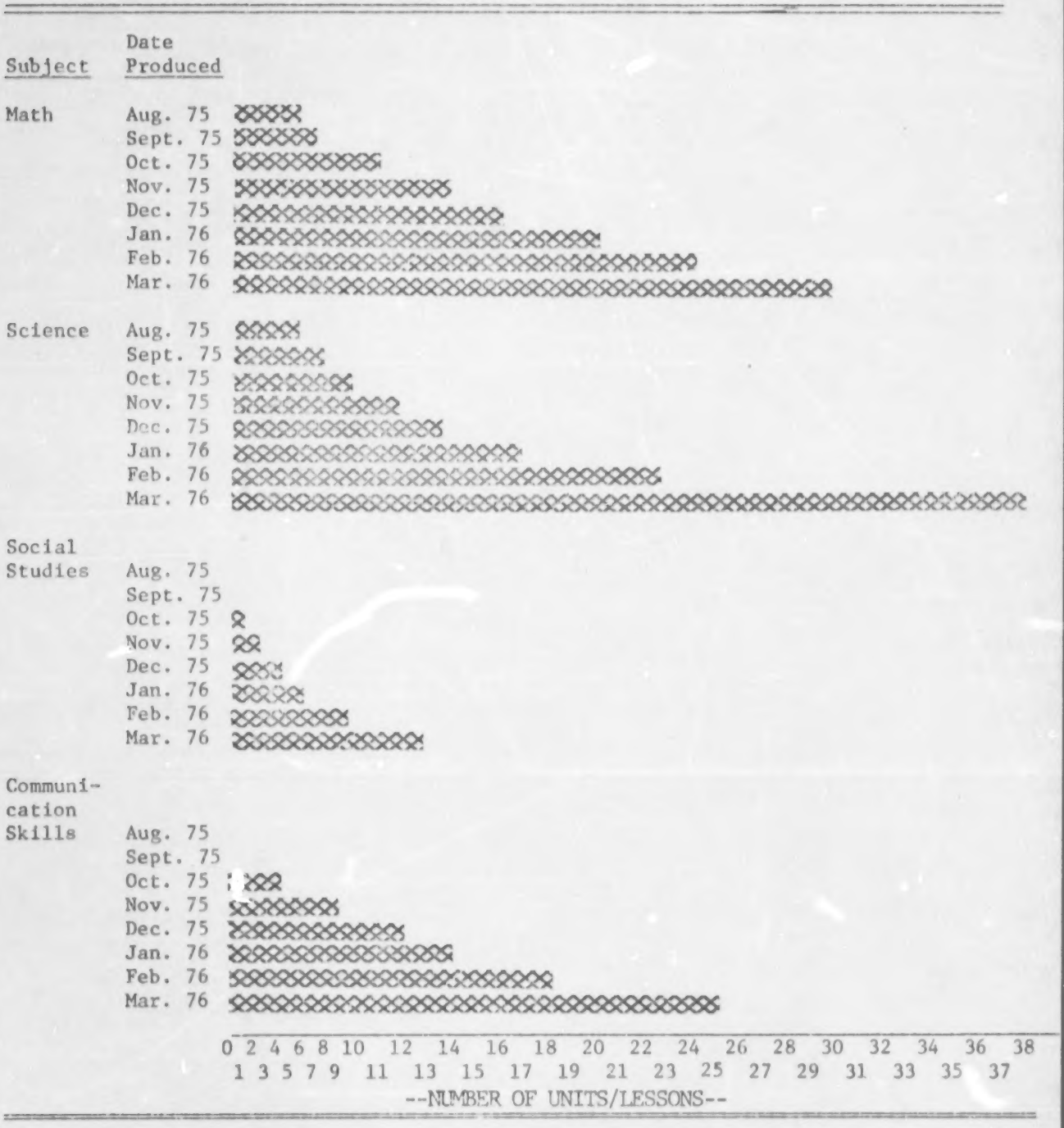
The uneven production rate reflected the difficulty the curriculum writers experienced in establishing productive working relations with staff from the two pilot high schools. With respect to the content areas of social studies and communication skills, some of the production delay was accounted for by the curriculum writer having broken his leg.

A documentary check log designed by the evaluator was maintained by the curriculum writers to describe their rate of production of new curricula. This was reported in both interim evaluation report one and interim evaluation report two. The production rate, as shown in report two is displayed in Figure 6.1. The graphs in that Figure indicated the trend in curriculum production for this project.

Objective 2.2 -- At least 80% of the target high school teachers in math, science, social studies, and communication skills will express their intention to continue to infuse career education curricula into their teaching programs.

Designed especially for this project was a teacher survey form, Curriculum Trial Test and Adoption Record. Four versions of the form were designed, one each for math, science, communication skills, and social studies. Listed on the Record was each lesson/unit developed by project staff and distributed to pilot high school teachers.

Figure 6.1
Production Rates of Secondary
Career Units/Lessons



For each lesson title, the teachers responding indicated:

- Whether that lesson had been reviewed or tried out
- Rating on a three-point scale the educational value of each lesson/unit
- Rating on a three-point scale the practicality of the lesson/unit
- Intention toward the unit: Adopt as is, Adopt with modification, Not adopt

There were 52 teachers responding to the survey. The data are summarized in Table 6.1.

TABLE 6.1:
RECORDED INTENTIONS OF PILOT HIGH SCHOOL TEACHERS

Subject	No. Teachers		No. Units: Review	Trial	No. Tchrs. Adopt	No. Teachers Adopt w. Modif.	No. Teachers Not Adopt
MATH	9		110	23	6	6	3
		$\bar{x}$=	*12.2*	*2.6*	*67%*	*67%*	*33%*
COMMUN-ICATION SKILLS	25		78	41	9	8	3
		$\bar{x}$=	*3.1*	*1.6*	*36%*	*32%*	*12%*
SCIENCE	6		118	23	4	5	2
		$\bar{x}$=	*19.7*	*3.8*	*67%*	*83%*	*33%*
SOCIAL STUDIES	12		27	16	8	6	5
		$\bar{x}$=	*2.3*	*1.3*	*67%*	*50%*	*42%*

Shown in the Table are the number of lesson/units reviewed and trial-tested by each group of teachers. Since each teacher made multiple reviews or classroom tests of the career education curricula, it was possible for each person to make multiple selections of units to adopt or adapt. For example, as a group, the nine math teachers indicated that they would adopt 17 of the curricula, adopt with modification 48 of the curricula, and not adopt eight of the curricula.

To determine the percent of teachers expressing intention to adopt career education curricula, a frequency count was made of each teacher expressing in writing and intention to adopt, modify, or not adopt any of the lesson/units. The data show that an expressed intention to adapt exemplary curricula was indicated by 67% of the math, science, and social studies teachers and 36% of the communication skills teachers. The intention to adopt with modification was expressed by 83% of the science teachers, 67% of the math teachers, 50% of the social studies teachers, and 32% of the communication skills teachers.

Conclusion.

The criterion for the objective was that 80% of the 52 teachers indicated an intention to utilize career education curricula in the future. From the data shown above, the criterion was approached, but not reached. Therefore, the objective is considered to have been met only partially.

Teacher Reactions to the Curricula.

The teacher responses to each of the four Career Curriculum Trial Test Record are summarized in the following tables:

- Mathematics, Table 6.2
- Science, Table 6.3
- Communication Skills, Table 6.4
- Social Studies, Table 6.5

Objective 2.2.1 -- 100% of high school teachers pilot testing exemplary curricula will provide analytical feedback to project curriculum writers for modification and improvement.

In measurement of this objective, the evaluator reviewed written feedback from teachers at the two pilot schools. First, less than 70% of the teachers who reported themselves as having pilot-tested curriculum materials provided any feedback. Second, of those who did, only about 50% of the remarks were designed to help project staff improve the product. For the rest, the comments were either negativistic in tone or an explanation as to why the teachers had not tried certain sections of the curriculum materials.

As measured against the criterion of analytical feedback from all teachers testing the material, the objective was considered to have been not met.

Objective 2.3 -- The Secondary Career Education Curriculum Guide will be adopted by the St. Louis Public Schools.

A camera-ready copy of the exemplary curricula in the four areas was produced by project staff before the end of June, 1976. The text was printed in quantity and distributed during the following fall. Each of the four curriculum guides are identified on the title page as a product of the Division of Curriculum, St. Louis Public Schools.

Therefore, the objective has been met.

A Qualitative Note

The evaluator reviewed those curricula which were available by March, 1976 for the presence or absence of certain elements, specified in advance by the curriculum writers and evaluators. The results were

TABLE 6.2

SUMMARY OF HIGH SCHOOL TEACHER REVIEW AND/OR CLASSROOM TRYOUTS OF PROJECT-DEVELOPED CAREER EDUCATION UNITS IN MATHEMATICS

Curriculum Title	Review	Try-out	Teacher Ratings: Educational Value High	Educational Value Med	Educational Value Low	Practicality High	Practicality Med	Practicality Low	Intentions: Adopt As Is	Intentions: Modified	Intentions: Not Adopt	Total Reviewers A	Total Reviewers M	Total Reviewers N	Total Trial Testers A	Total Trial Testers M	Total Trial Testers N
Career Orientation Mathematics	1										1			1			
		1	●	●	●	●	●	●		1							1
Using Scale Ratios	4								1	3		1	3				
		1	●	●	●	●	●	●		1							1
Using Percents in Proportions	3									3			3				
		0	●		●	●		●									
Percent in Practical Situations	1									1			1				
		2	●		●	●		●	1	1					1	1	
Fractions of a Percent	2									2			2				
		0	●		●	●		●									
Basic Figures in Geometry	1								1			1					
		0	●		●	●		●									
Perimeter, Area and Volume	5								1	4		1	4				
		1	●		●	●		●	1								1
Similar Polygons	1																
		1	●		●	●		●	1			1					
Coordinate Geometry	3									1							1
		0		●			●		1	1	1	1	1	1			
The Right Triangle	2																
		1		●			●		1	1		1	1				
										1							1

TABLE 6.2(continued)

Curriculum Title	Number Teachers Review	Number Teachers Try-out	Teacher Ratings: Educational Value High	Educational Value Med	Educational Value Low	Practicality High	Practicality Med	Practicality Low	Intentions: Adopt As Is	Intentions: Modified	Intentions: Not Adopt	Total Reviewers A	Total Reviewers M	Total Reviewers N	Total Trial Testers A	Total Trial Testers M	Total Trial Testers N
Binary Numbers	0	0															
Square Roots	0	1		●			●			1							1
Sets	2	0		●			●			2			2				
Calculating/Computing wages	2	1		●			●		1	1		1	1			1	
				●			●		1								
Mixture Problems	0	1		●			●		1							1	
Math on Daily Living	1	0		●			●		1			1					
Perimeters of Rectangles	0	2		●			●		2							2	
Building/Financing a Home	1	0		●			●			1			1				
Math Requirements - Certain Careers	0	0															
Local/Federal Taxes	2	0		●			●			2							2

TABLE 6.2 (continued)

Curriculum Title	Number Teachers Review	Number Teachers Try-out	Teacher Ratings: Educational Value High	Educational Value Med	Educational Value Low	Practicality High	Practicality Med	Practicality Low	Intentions: Adopt As Is	Modified	Not Adopt	Total Reviewers A	M	N	Total Trial Testers A	M	N
Determining Personal Income	1	0	●			●			1			1					
Income Tax	1	0	●			●				1			1				
Using Mathematics as a Worker and Citizen	0	0															
Investments - Stocks and Bonds	1	0		●				●			1		1				
Installments, loans, credit	1	0	●				●			1			1				
Reading and Constructing Graphs	1	0	●			●				1			1				
Commercial Transportation	1	0	●				●			1			1				
Banking Services: Savings Account	2	0	●			●				2			2				
Banking Services: Checking and Borrowing	1	0	●			●				1			1				
Reading Tables for Making Change	0	1	●			●			1							1	

TABLE 6.3
SUMMARY OF HIGH SCHOOL TEACHER REVIEW AND/OR CLASSROOM TRYOUTS OF PROJECT-DEVELOPED CAREER EDUCATION UNITS IN SCIENCE

Curriculum Title	Review	Try-out	Teacher Ratings: Educational Value High	Educational Value Med	Educational Value Low	Practicality High	Practicality Med	Practicality Low	Intentions: Adopt As Is	Modified	Not Adopt	Total Reviewers A	M	N	Total Trial Testers A	M	N
Scientific Method	2	1	●	●		●	●		1	1 1		1	1			1	
Metric System (1) Linear	3	1	●	●		●	●		2 1	1		2	1		1		
Metric System (2) Mass and Force	2	1	●	●		●	●		1	1 1		1	1			1	
Metric System (3): Temp. Time Conversion	2	1	●	●		●	●		1	1 1		1	1			1	
Metric System (4) Laboratory Uses	3	1	●	●		●	●		1 1	1	1	1	1	1	1		
Biological Science-Health Careers	4	1	●	●		●	●		3	1 1		3	1			1	
Natural Resources Conservation	4	1	●	●		●	●		3 1	1		3	1		1		
Conservation of Nature	2	1	●	●		●	○		2 1			2			1		
Solid Waste	3	0	●			●				2	1		2	1			
Disposal	3	1	●	●		●	●			2 1	1		2	1		1	

TABLE 6.3(continued)

Curriculum Title	Number Teachers Review	Number Teachers Try-out	Teacher Ratings: Educational Value High	Educational Value Med	Educational Value Low	Practicality High	Practicality Med	Practicality Low	Intentions: Adopt As Is	Intentions: Adopt Modified	Intentions: Not Adopt	Total Reviewers A	Total Reviewers M	Total Reviewers N	Total Trial Testers A	Total Trial Testers M	Total Trial Testers N
Resource Recovery	3	0	●			●			2		1	2		1			
Air Pollution	3	1	● ●			● ●			2	1 1		2	1			1	
Water Pollution	4	0	●			●			2	2		2	2				
Abundance of Living Things	3	1	● ●			● ●			2 1	1		2	1		1		
Ecology Worker/Biochemist	3	0	●			●			2	1		2	1				
Biology-A Look at Careers	2	0	●			●			2			2					
Using the Microscope	1	3	● ●			● ●			1 1	2		1			1	2	
Animal Physiology	1	1	● ●			● ●			1 1			1			1		
Zoological Project	0	1	●			●				1						1	
Body Chemistry/Analysis	1	0	●			●			1			1					
Basic Laws of Physics	1	1	● ●			● ●				1 1			1			1	

TABLE 6.3(continued)

Curriculum Title	Number Teachers Review	Number Teachers Try-out	Teacher Ratings: Educational Value High	Educational Value Med	Educational Value Low	Practicality High	Practicality Med	Practicality Low	Intentions: Adopt As Is	Intentions: Adopt Modified	Intentions: Not Adopt	Total Reviewers A	Total Reviewers M	Total Reviewers N	Total Trial Testers A	Total Trial Testers M	Total Trial Testers N
Noise Pollution	0	1	●			●				1						1	
The Weather	0	0															
The Earth's Crust	0	0															
Chemistry	1	0	●			●			1			1					
Botany Project	1	1	● ●			●	●		1 1			1			1		
The Nature and Behavior of Matter	0	0															
Matter and Energy	1	0	●			●				1		1					
Force and Motion	0	0															
Work	0	0															
Heat	0	0															

6.11

TABLE 6.3 (continued)

Curriculum Title	Number Teachers Review	Number Teachers Try-out	Teacher Ratings: Educational Value High	Educational Value Med	Educational Value Low	Practicality High	Practicality Med	Practicality Low	Intentions: Adopt As Is	Intentions: Adopt Modified	Intentions: Not Adopt	Total Reviewers A	Total Reviewers M	Total Reviewers N	Total Trial Testers A	Total Trial Testers M	Total Trial Testers N
Sound	0	0															
Light	1	0	●			●				1			1				
Electricity	1	2	● ●			● ●			1	2		1				2	
Magnetism	0	1	●			●				1						1	
Health - Nutrition	2	1	● ●			● ●				2 1			2			1	
Careers in Health	3	0	●			●			1	2		1	2				
Science Requirements for Certain Careers	1	1	● ●			● ●				1 1			1			1	
Personal Health	1	1	● ●			● ●			1	1		1				1	

TABLE 6.4
SUMMARY OF HIGH SCHOOL TEACHER REVIEW AND/OR CLASSROOM TRYOUTS OF PROJECT-DEVELOPED CAREER EDUCATION UNITS IN COMMUNICATION SKILLS

Curriculum Title	Review	Try-out	Teacher Ratings: Educational Value (High / Med / Low)	Teacher Ratings: Practicality (High / Med / Low)	Intentions: Adopt As Is	Intentions: Modified	Intentions: Not Adopt	Total Reviewers: A	Total Reviewers: M	Total Reviewers: N	Total Trial Testers: A	Total Trial Testers: M	Total Trial Testers: N
Radio Dramatization	7	0	●	●	3	3	1	3	3	1			
Advertising - A Need to Know	4	3	● ●	● ●	1	4 3		1	4			3	
The Reporter	4	3	● ●	● ●	2	3	2	2		2		3	
Working Photographer	3	1	● ●	● ●	1 1		2	1		2	1		
Learn to Listen	7	2	● ●	● ●	5 1	2 1		5	2		1	1	
Publication Layouts	4	5	● ●	● ●	1	1 4	3		1	3	1	4	
Listening	5	3	● ●	● ●	4 2	1 1		4	1		2	1	
The Screen Test	5	1	● ●	● ●	4	1	1	4		1		1	
Filmmaking	5	1	● ●	● ●	3		2 1	3		2			1
Play Production	3	0	●	●	2		1	2	1				

6.13

TABLE 6.4 (continued)

Curriculum Title	Number Teachers Review	Number Teachers Try-out	Teacher Ratings: Educational Value High	Educational Value Med	Educational Value Low	Practicality High	Practicality Med	Practicality Low	Intentions: Adopt As Is	Adopt Modified	Not Adopt	Total Reviewers A	Total Reviewers M	Total Reviewers N	Total Trial Testers A	Total Trial Testers M	Total Trial Testers N
Basic Writing Skills	4			●			●		2		2	2		2			
		4	●			●			3		1				3		1
Reading for Meaning	3		●			●			2		1	2		1			
		3	●			●			3						3		
Speak Out - Addressing World of Work	3		●			●			2		1	2		1			
		1	●			●				1						1	
Writing Skills	4		●			●			3		1	3		1			
		2	●			●			1		1				1		1
Reading Improvement	2		●			●			2			2					
		3	●			●			2	1					2	1	
Power of Media	3		●				●		2		1	2		1			
		1	●			●				1						1	
Careers in Humor	3				●			●	1		2	1		2			
		1		●			●			1						1	
Education Occupations	1		●			●			1			1					
		2	●			●			1	1					1	1	
The Library	3		●			●			2	1		2	1				
		1	●			●			1						1		
School Photo Business	2			●			●		1		1	1		1			
		0															

6.14

TABLE 6.4(continued)

Curriculum Title	Number Teachers Review	Number Teachers Try-out	Teacher Ratings: Educational Value *High*	*Med*	*Low*	Practicality *High*	*Med*	*Low*	Intentions: Adopt As Is	Modified	Not Adopt	Total Reviewers A	M	N	Total Trial Testers A	M	N
Careers in Sports	0	0															
Literature and Life Goal Setting	1	1	●	●		●	●			1 1			1				1
Uncovering Values in Literature	2	2	●		●	●		●	1	1 1	1		1	1		1	1
Technical Writing	0	1	●			●				1							1
College Preparation	3	0	●			●			1	1	1	1	1	1			
Speaking in the World of Work	3		●			●			1	1	1				1	1	1

TABLE 6.5
SUMMARY OF HIGH SCHOOL TEACHER REVIEW AND/OR CLASSROOM TRYOUTS OF PROJECT-DEVELOPED CAREER EDUCATION UNITS IN SOCIAL STUDIES

Curriculum Title	Review	Try-out	Teacher Ratings: Educational Value High	Educational Value Med	Educational Value Low	Practicality High	Practicality Med	Practicality Low	Intentions: Adopt As Is	Adopt Modified	Not Adopt	Total Reviewers A	Total Reviewers M	Total Reviewers N	Total Trial Testers A	Total Trial Testers M	Total Trial Testers N
City Planning	3	1		●	●		●	●		1	2 1		1	2			1
Housing Safety, The Building Inspector	1	3	●	●			●	●	1	2	1			1	1	2	
Avoiding School Pollution	1	1		●	●		●	●			1 1			1			1
Recreation Services	0	3		●			●		1	2					1	2	
Inter-City Transportation	0	1			●			●		1						1	
Commercial Transportation	0	2		●			●			1	1					1	1
Automobile Industry	0	0															
St. Louis Area Traffic Concerns	0	0															
Advertising and the Consumer	0	0															
Credit and Savings	0	2	●			●			1	1					1	1	

TABLE 6.5(continued)

Curriculum Title	Number Teachers Review	Number Teachers Try-out	Teacher Ratings: Educational Value High	Educational Value Med	Educational Value Low	Practicality High	Practicality Med	Practicality Low	Intentions: Adopt As Is	Intentions: Modified	Intentions: Not Adopt	Total Reviewers A	Total Reviewers M	Total Reviewers N	Total Trial Testers A	Total Trial Testers M	Total Trial Testers N
Personal and Career Values	1	1	● ●			● ●			1	1		1			1		
Marriage: A Full-Time Job	0	0															
Social Services Careers	0	1	●			●				1					1		
A Working Vocabulary	0	1	●			●			1						1		
Employment and Education	3	1	● ●			● ●			2 1	1		2	1		1		
Pollution	3	1	●		●	● ●			1 1		2	1		2	1		
Neighborhood Decay	3	0	●			●			2	1		2		1			
Law and the Courts	1	4	● ●			● ●			1 4			1			4		
Social Security	2	1	●		●	●		●	1		2			2	1		
Government Service Jobs	1	2	●		●	● ●			1	1 1			1		1	1	

6.17

TABLE 6.5(continued)

Curriculum Title	Number Teachers		Teacher Ratings						Intentions			Total Reviewers			Total Trial Testers		
			Educational Value			Practicality											
	Review	Try-out	*High*	*Med*	*Low*	*High*	*Med*	*Low*	Adopt As Is	Modified	Not Adopt.	A	M	N	A	M	N
Buying a Home	0	1	●			●			1						1		
The Aged	1	1	●	●		●		●	1 1			1			1		
Urban Health Care	2	1	●		●	●		●	2 1			2			1		
Parent-Child Relations	0	0															
Values: Establishing Priorities	2	3	●		●	●		●	3	2		2			3		
Police Community Relations	1	1	●		●	●		●	1	1		1			1		

presented in interim evaluation report two.

The general finding was that the lesson/units were well conceived and of practical value to teachers. However, the evaluator in his review pointed out that opportunity for student self-analysis with respect to career decision-making was lacking in most of the proposed curricula. As a corrective measure, the curriculum writers produced a set of Student Logs-Worksheets, and these were appended to each of the four volumes. In the evaluator's opinion, worksheets 1 through 4 address directly the matter of providing opportunity for student self-analysis -- decision making.

Section 7.0

EVALUATION FINDINGS: COMMUNITY INVOLVEMENT

In this section the evaluation findings are presented on the extent to which objectives were met for the community involvement component of Project ICE.

Objective 3.1 -- Project staff will produce a publication, Community Learning Resource Guide.

To fulfill this specified project activity, a part-time personnel was secured from the staff of a local university. It was reported in Table 4.2 that this position with Project ICE was accepted in late August. The time span in which this staff fulfilled his responsibilities was September, 1975 through the end of March, 1976.

During this time, the project Community Resource Liaison contacted persons in businesses, industries, professions throughout the metropolitan area, recording the specifics of all available human and community resources.

To measure this objective, the evaluator interviewed the project community resources staff on three separate occasions and reviewed the documentary records maintained by that staff.

Among the documents reviewed was a draft of the completed Community Resources Learning Guide. In the evaluator's review, he noted that the document was comprehensive, covering the entire St. Louis metropolitan area (including parts of Illinois), and that it represented

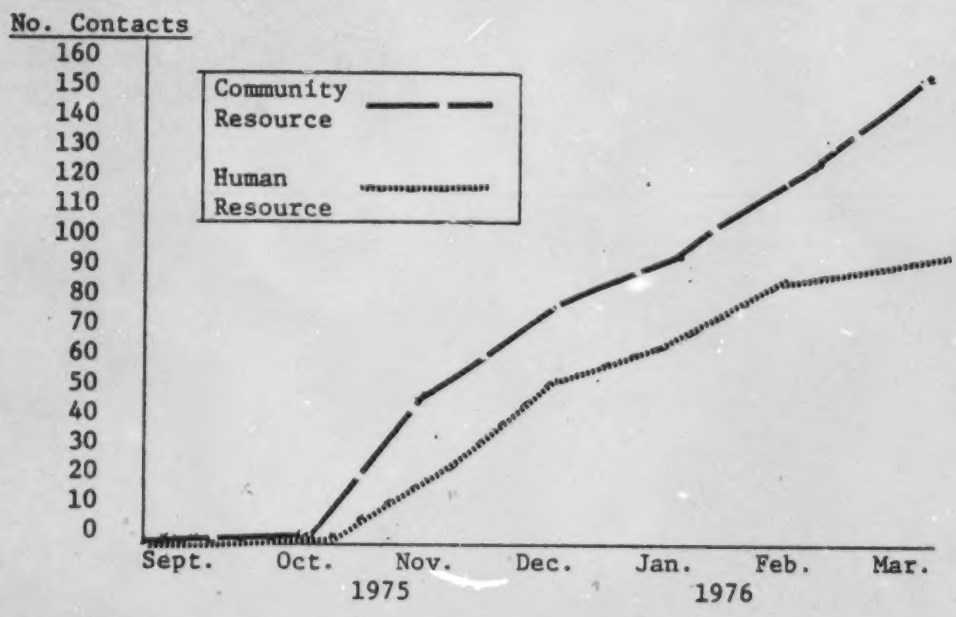
- Trade and Industry
- Professions and Professional Organizations
- Educational Institutions
- Museums
- Service Groups
- Transportation
- Communication

Other areas are covered, as well.

To accomplish this, the project community resource staff member made contacts in person, by telephone, and through public meetings. Each contact led to several others, until sufficient coverage had been achieved.

Shown in Figure 7.1 is the rate of community and human resource contact made by the project community resource staff member.

Figure 7.1
Community and Human Resources
Contacts Made by Project Staff



Conclusion, Objective 3.1.

Based upon the quality of the final product and the process by which it was achieved, the objective was considered to have been met.

Objective 3.2 -- The resources contained in the Community Learning Resource Guide will represent a significantly greater variety of occupations than is presently available.

The Community Resource Liaison Staff informed the evaluator during the initial interview that he began his task fresh, without recourse to any existing community resource document in the school system. Since review of prior material was not part of this staff's operational plan, this objective was not measured.

Objective 3.3 -- Elementary teachers in target schools will engage in significantly greater numbers of career-related experiences such as field trips, guest speakers, and observing workers in action.

Data from (1) Principal's interviews, (2) Teacher self-reports, and (3) External evaluation observers indicated that there was a general tendency during the 1975-76 school year for elementary teachers to engage in a greater number of the specified activities. However, the significance (or lack thereof) was not measured.

The rationale was that the Community Learning Resource Guide was to have stimulated significant increases in community-based experiences. However, the resource guide was not available during the school year. The final draft was transmitted to the project by the end of March, 1976. Thereafter, the material was re-typed to prepare a camera-ready copy.

The copy was sent to the printer for reproduction. It was not available to the project as late as September, 1976.

Therefore, any teacher increments in community activity was unrelated to the availability of the guidebook.

Objective 3.4 -- An Advisory Council composed of parents, representatives of community industry, business, and professionals, and school personnel will be established for the project. It will assist the project in at least these areas: (1) Instructional materials; (2) Hands-on experience; (3) Dissemination of career education activities (4) Contact persons in business, industry, agencies and institutions; (5) Commitments for student observation experiences; (6) Classroom volunteers; and (7) Prepare a recommendation on project continuation.

In measurement of this objective, the evaluator attended about 80% of the advisory council meetings. Moreover, he monitored Council activities through records, interviews with the Project Director and Community Resource Liaison Staff member.

First, an Advisory Council was convened for the project. It consisted of at least the catagories of members specified in the objectives.

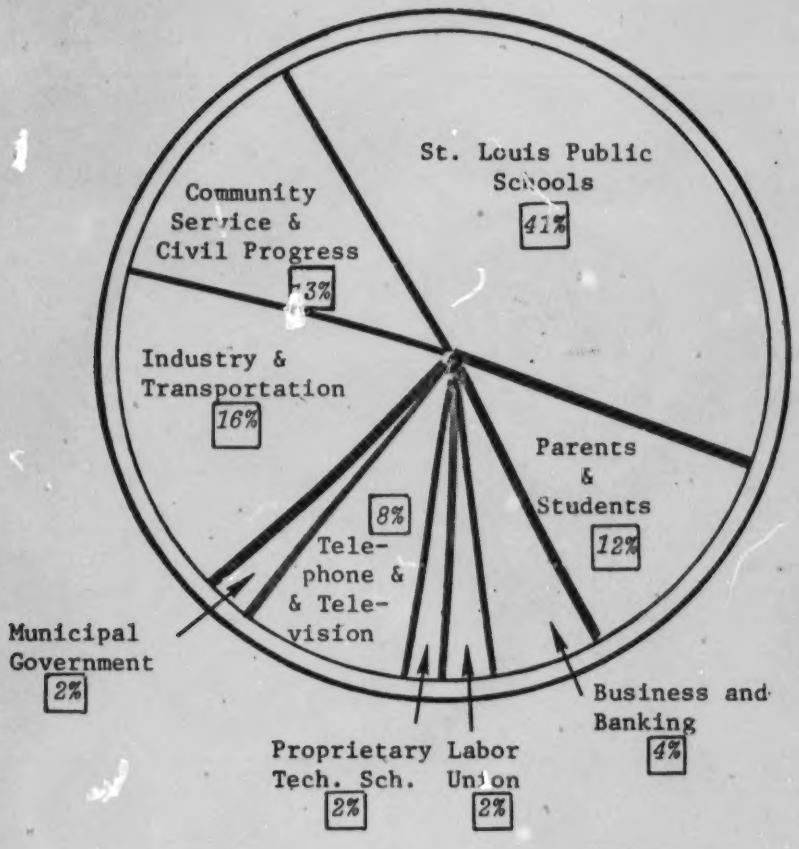
The composition of the council and the proportions of various membership groups is displayed graphically in Figure 7.2.

Instructional materials were supplied to the school system by the council member representing the Southwestern Bell Telephone Company. Most of these materials included provision for students to gain hands-on experience.

It was reported by the community resources staff member that at least six council members provided valuable contacts to resource persons, which resulted in listings in the Community Learning Resource Guide.

Commitments for student observation experiences were supplied by a number of council members, and these are listed in the community guide book. Members from two organizations, KMOX-TV and Ralston-Purina Company, should be singled out for mention as a source for teacher and student observation experiences.

While the council did not prepare a specific recommendation concerning project continuation, the career education and Community Advisory Council did submit a written recommendation to the Superintendent of Schools at the Board of Education regarding the inclusion of career education in the innovative"magnet" school network being developed for the school system. This recommendation was accepted, and career education can now be seen in the programs of several of the new school organizations.



N=57

Source of Data: Project ICE Membership Roster, Community Advisory Council

FIGURE: 7.2
COMPOSITION OF THE PROJECT
COMMUNITY ADVISORY COUNCIL

Other significant activities carried out by the council included (1) Hearing a report on the career education program in one school from the principal, a teacher, and two students from that school building, and (2) Observing career education in action in classrooms through a "career caravan" held in Spring, 1976.

Conclusion.

It is admittedly difficult to specify in advance the objectives for a group of community professionals and lay persons from outside the school system. Despite this difficulty, the community council for Project ICE did, to a greater or lesser extent, fulfill the specified role requirement. Therefore, the objective was met, for all practical purposes.

Section 8.0

STUDENT OUTCOMES

In the program design it was envisioned that, through elementary-school classroom presentations on career education, students would: (1) gain knowledge about the world of work and careers; (2) display increasingly more positive attitudes toward themselves and others, school and work and (3) students receiving instruction through pilot high school trial tests would endorse the curricula and desire more career related instruction.

Objectives centering around those aims were set for the program. The elementary-grade objectives were measured through pre-and-post tests. Outcomes for high school students were measured through informal questionnaires, designed especially for the Project ICE evaluation.

INSTRUMENTATION

Elementary Career Knowledge Test

Sub-tests from the Career Knowledge (CK) and Orientation to Career Concepts series (OCC) were selected by the evaluator to assess student gains in career knowledge and concepts. The test series was developed by Dr. Barbara Fulton and Dr. Robert Tolsma, and it is distributed by ERA, Incorporated, St. Louis, Missouri.

Primary Grades.

The CK was designed to measure Grade K-3 children's knowledge of the work world. The CK is a picture test in which children select the picture that best fits the key word pronounced by the test administrator.

The CK contains three scales, as follows:

- Occupational Similarities. This measures ability to select from three pictured occupations the one most similar to a given occupation.
- Occupational Differences. This measures ability to select from three pictured occupations the one that is most different from a given occupation.
- Occupation Tools. This measures ability to select from three pictured tools the one that most likely would be used by a worker in a given occupation.

46 different occupations are depicted in the CK. They were representative of occupations listed in the Dictionary of Occupational Titles and Occupational Outlook Handbook.

In the test manual, the publisher reported the reliability estimate of Career Knowledge as .848. The publisher claimed construct validity and curricular validity. The intercorrelations among the three CK scales were moderate and positive (.38, .37, and .26).

Middle and Upper Elementary Grades.

The Orientation to Career Concepts series was designed for Grades 4-8. The OCC consists of a battery of ten tests each containing 20 items. The student responds on a separate machine-scorable answer sheet.

For this evaluation, 6 of the ten tests were selected:

- Work Awareness. This test is in story form; it measures students' ability to relate children's daily activities to adult work.
- Work Stories. This test is in story form; it measures student's ability to relate interests, abilities, and hobbies to possible occupations.
- Worker Activities. This test measures the student's knowledge of what workers do in various occupations.
- Working Conditions. This test measures the student's knowledge of working conditions in various occupations.
- Occupational Training. This test measures student's knowledge of the extent of training required for entry into various occupations.
- Workers' Earnings. The test measures student's knowledge of the relative amount of money one may expect to earn in different occupations.

The publisher reported the test reliability for each sub-test for each grade, 4-8. A reliability estimate was given for urban, inner city populations. For this type of population, the alpha coefficents were in the .60's, .70's, or .80's.

In the manual, the publisher claimed curricular validity in that 237 different occupations, drawn from all nine DOT categories are represented in the test. The intercorrelations of all sub-tests ranged from a low of .30 to a high of .75.

Attitude Scales.

Student attitudes were measured by the Student Attitude Survey (SAS). The SAS consists of two sets of tests designed to measure student attitude toward self and others, and toward school and work: one for primary grades and one for students in Grades 3-12.

Primary Grade Attitude Scales.

The SAS (Form A) is a non-verbal test in which the child responds to questions about the stimulus pictures in the test booklet.

The scales within the SAS are:

- Self Index. A high score indicates the child: feels that he is loved; enjoys playing with others and by himself; gets approval from others; and is generally happy.

- Other Index. A high score indicates the child enjoys: working and playing with others; likes being with other children or adults; enjoys meeting new people and helping others.

- School Index. A high score indicates the child enjoys school and school-related activities.

- Work Index. A high score indicates the child likes doing household and school chores, expected of children.

The publisher reported scale reliabilities ranging from .62 to .78.

Middle Grades and Upper Elementary Attitude Scales.

The SAS for Grades 4-8 contains the following attitude scales:

- Positive Self Index. A high score indicates one who sees himself as having few problems, generally happy, liked and trusted by others, as good as other people.

- Positive Other Index. A high score indicates one who tends to feel positive towards others, likes to be with other people and help them, and sees most of his friends as being about like he is.

- Positive School Index. A high score on this scale indicates one who feels school is fun, likes his teachers, enjoys doing school-related work, and completes his work.

- Positive Work Index. A high score on this scale indicates the student has thought about his career and would like to know more about jobs, expects working to be fun, and feels that students should learn about careers and jobs in school.

- Achievement Need. A high score on this scale indicates the student wants to be one of the best in class, envies others who do better, and will do almost anything to be among the best. A low score indicates a rejection of these types of attitudes. On this scale, a moderate score represents the most healthy attitude.

The test manual stated that the scale reliabilities ranged from .65 to .86. Both concept and construct validity were claimed for the SAS. The item intercorrelations were greater than .5 (for within scales) and less than .2 (for between scales).

TEST METHODOLOGY

There were three types of school slated to take part in the career education testing program:

- 15 target schools, where teachers received special consultant help in career education.
- 15 non-target schools, where a building coordinator after inservice training, was responsible for leading the effort in career education.
- 1 pilot school, which had participated in a previous career education project and had a "mature" program.

Guidelines for Testing.

The purposes for the testing program were: (1) To collect data on the status of student knowledge and attitudes on topics in the domain of career education; (2) To compare students at all grades in target and non-target schools (a) within types of school and grades and (b) between types of school and grades; and (3) To administer the testing within the regular, extensive testing program conducted by the school system. Moreover, minimizing to the greatest extent possible the test and clerical burden on the teacher was a guideline for administration of the career education tests.

Sampling Design.

The unit for testing was intact classes. The student population was 7094. A sample of 2130 students (30%) was selected for testing. For a sample of this size, the estimated mean will lie within .04 standard deviations of the estimated population mean, at P=.05.

Useable pre-and-post returns were received from 1972 students (nearly 28%). The estimated mean of that size sample is still within .04σ of the population mean (at P=.05).

In the program, teachers were trained to "infuse career education wherever and whenever possible." Since no specific course content had been specified for any grade, the tests were assigned as follows: (1) CK and SAS (Forms A and C) for the primary grades; (2) OCC and SAS (Forms B and C) for Grades 4-8. The OCC tests and 2 SAS tests were assigned to intact classes.

Primary grade classes selected for the sample received one test. Each Grade 4-8 class selected for the sample took two tests. A matrix sampling procedure was used to assign test treatments to classes.

Intact classes were selected at random with precautions taken to maximize comparisons between target and non-target schools and Title I and non-Title I schools.

The sample included 32 Kindergarten-Grade 3 classrooms; 25 Grade 4-6 classrooms; and 17 Grades 7 and 8 classrooms. Career education testing was conducted in 28 of 31 schools.

Testing Procedures.

The evaluator established a schedule for career education testing within the parameters of the school system testing program, including achievement testing, IQ testing, screening, and so on. Working with the career education building coordinator in each school, it was arranged that teachers would administer the tests. The evaluator retreived the answer sheets, generated student numbers for identification, and employed helpers to code the answer sheets and score the primary-level tests. They were forwarded to the publisher for computer scoring and specified statistical analyses.

MEASUREMENT OF STUDENT OUTCOME OBJECTIVES

In this section the data collected in measurement of objectives in the student outcome component are presented.

Primary Grade Objectives

Objective 4.1 -- Learners in target schools, Grades K-3 will increase significantly in career awareness.

Objective 4.2 -- Gains in career knowledge will be analyzed for learners in Grades K-3, non-target schools.

Displayed in Figure 8.1 is the testing plan for the primary grades. The school buildings are designated by number rather than name. The numeration system identifies each school as target, non-target, or pilot, and whether or not the school was served through Title I. In all, 598 primary grade students were tested. The CK test was taken by 215 children in Grades K-3.

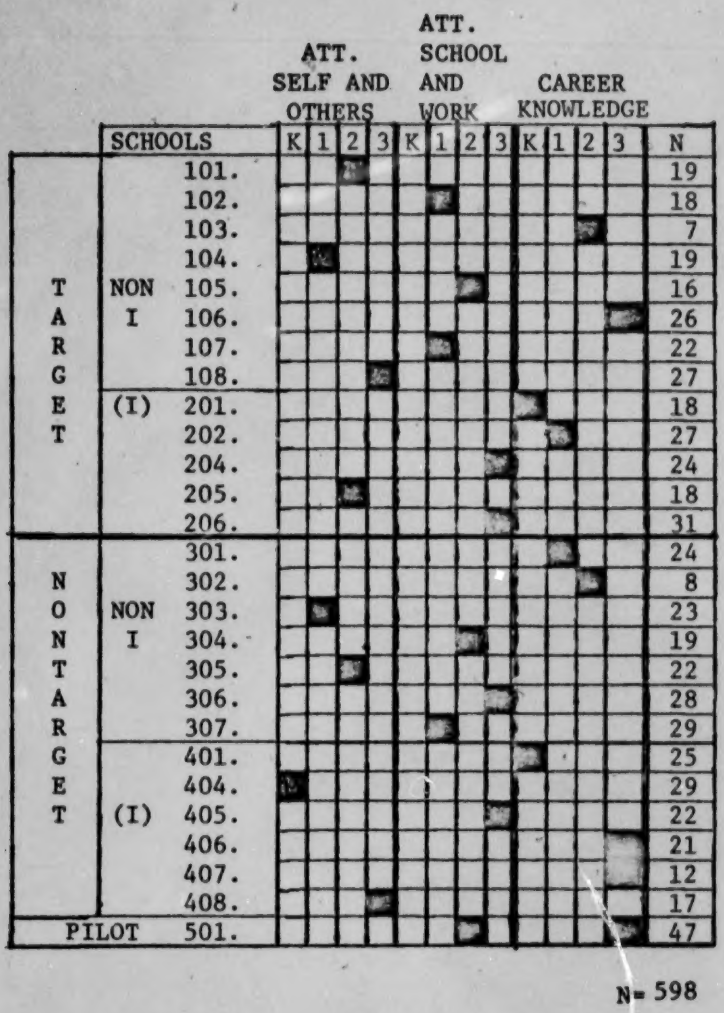


Figure 8.1 :
Testing Plan: primary grades

The analysis technique used to measure significance of pre-post test difference was the t-test. The minimum level of significance was set in advance as .05, or less.

Pre-Post Differences, By Grade Levels.

The initial analysis was to determine the significance of differences by grade levels, regardless of type of school. The mean difference between pre-and-post tests for Occupational Similarities, Occupational Differences, Occupational Tools, and Composite Career Knowledge are shown in Tables 8.1 and 8.2.

The data indicate that measurably significant increases occurred in Kindergartens for all four sub-tests. On one test (Differences) a significant gain was registered for Grade 3. However, at that same grade level, there was a significant decrease on the composite test.

Pre-Post Differences Within Target and Non-Target Schools.

Pre-post test data were analyzed by school sub-categories. Those analyses are shown in Figures 8.2 through 8.5. Presented in Figure 8.2 are the pre-post mean scores and statistical analyses on Occupational Similarities. Those data show significant increases in three target classrooms and two non-target classrooms.

Displayed in Figure 8.3 are the pre-post mean scores on Occupational Differences. Significant gains were achieved in 3 target schools and 3 non-target schools.

Measured gains in Knowledge of Occupational Tools were registered in 2 target schools and 1 non-target school, as is shown in Figure 8.4.

The pre-post mean scores on a composite of all three Career Knowledge primary tests are given in Figure 8.5. The data show significant gains for three target schools and for three non-target schools.

Objective 4.3 -- Learners in Grades K-3 in Target schools will demonstrate significantly greater increases in career knowledge than learners in the same grades in Non-target schools.

Pre-Post Differences Between Target and Non-Target Schools.

Summarized in this section are analyses of the gain scores (pre-post differences) attained by children at the same grade levels in target and non-target, Title I and non-Title I schools. The analysis technique was the t-test.

TABLE 8.1
SIGNIFICANCE OF DIFFERENCE BETWEEN PRIMARY GRADE PRE-POST TEST SCORES IN KNOWLEDGE OF OCCUPATIONAL SIMILARITIES AND DIFFERENCES

MEASURE	GRADE	FORM	N	MEAN	SD	t	SIGNIFICANCE
KNOWLEDGE OF OCCUPATIONAL SIMILARITIES	K	PRE	59	4.24	3.09	-2.92	.005
		POST	59	5.00	3.34		
	1	PRE	162	1.64	2.59	- .52	NS
		POST	162	1.77	2.81		
	2	PRE	143	0.64	1.95	- .39	NS
		POST	143	0.73	2.20		
	3	PRE	234	2.55	3.47	.30	NS*
		POST	234	2.51	3.51		
	ALL	PRE	598	2.01	3.07	- .67	NS
		POST	591	2.13	3.25		
KNOWLEDGE OF OCCUPATIONAL DIFFERENCES	K	PRE	59	2.78	2.36	- .17	.01
		POST	59	4.39	3.12		
	1	PRE	162	0.79	1.76	- .37	NS
		POST	162	0.83	1.75		
	2	PRE	143	0.65	2.01	- .29	NS
		POST	143	0.69	2.09		
	3	PRE	234	2.12	3.25	-2.10	.025
		POST	234	2.53	3.61		
	ALL	PRE	598	1.47	2.66	-2.13	.01
		POST	598	1.81	3.05		

* PRE-TEST > POST-TEST

TABLE 8.2
SIGNIFICANCE OF DIFFERENCE BETWEEN PRIMARY GRADES PRE-POST
TEST SCORES IN KNOWLEDGE OF OCCUPATIONAL TOOLS AND OVERALL CAREER KNOWLEDGE

MEASURE	GRADE	FORM	N	MEAN	SD	t	SIGNIFICANCE
KNOWLEGE OF OCCUPATIONAL TOOLS	K	PRE	59	4.83	3.33	-6.23	.005
		POST	59	6.14	3.97		
	1	PRE	162	2.36	3.62	-1.00	NS
		POST	162	2.57	3.88		
	2	PRE	143	0.91	2.69	.05	NS *
		POST	143	0.90	2.66		
	3	PRE	234	3.12	4.22	- .28	NS
		POST	234	3.19	4.40		
	ALL	PRE	598	2.55	3.82	- .91	NS
		POST	598	2.77	4.11		
OVERALL CAREER KNOWLEDGE	K	PRE	59	11.85	8.25	-7.66	.005
		POST	59	15.29	10.34		
	1	PRE	162	4.79	7.41	- .98	NS
		POST	162	5.17	7.79		
	2	PRE	143	2.19	6.55	- .34	NS
		POST	143	2.32	6.89		
	3	PRE	234	7.79	10.64	6.76	.005*
		POST	234	5.49	9.75		
	ALL	PRE	598	6.04	9.18	.81	NS
		POST	598	5.61	9.33		

* PRE TEST > POST TEST

GRADE	SCHOOL		SCALE 0 | 5 | 10 | 15	MEAN SCORE	N	t-test	SIGNIFICANCE
2	103	PRE		5.29	7	-2.98	.01
		POST		6.86			
3	106	PRE		6.23	26	-1.93	.05
		POST		6.81			
K	201	PRE		6.67	18	-2.96	.005
		POST		8.00			
1	202	PRE		5.04	27	+0.78	NS
		POST		4.70			
1	301	PRE		5.78	24	-3.16	.005
		POST		6.62			
2	302	PRE		6.75	8	-0.67	NS
		POST		7.13			
K	401	PRE		5.20	25	-1.74	.05
		POST		6.04			
3	406	PRE		6.86	21	+1.07	NS
		POST		6.29			
3	407	PRE		6.92	12	-0.96	NS
		POST		7.42			
3	501	PRE		4.43	47	+0.46	NS
		POST		4.04			

SCHOOL CODE:

100 = Target
200 = Target, I
300 = Non-Target
400 = Non-Target I
500 = Pilot

+: Pre-test > Post-test

FIGURE 8.2:
SIGNIFICANCE OF POSITIVE CHANGE IN
PRIMARY STUDENTS' MEASURED KNOWLEDGE OF OCCUPATIONAL SIMILARITIES

GRADE	SCHOOL		SCALE 0 2 4 6 8	MEAN SCORE	N	t-test	SIGNIFICANCE
2	103	PRE		5.86	7	-1.55	NS
		POST		6.43			
3	106	PRE		5.50	26	-2.24	.05
		POST		6.50			
K	201	PRE		5.00	18	-5.66	.005
		POST		7.38			
1	202	PRE		2.52	27	-2.10	.05
		POST		3.52			
1	301	PRE		2.54	24	+1.49	NS
		POST		1.67			
2	302	PRE		6.50	8	-0.20	NS
		POST		6.63			
K	401	PRE		2.96	25	-4.86	.005
		POST		5.04			
3	406	PRE		4.19	21	-2.59	.01
		POST		6.52			
3	407	PRE		4.75	12	-2.77	.01
		POST		7.16			
3	501	PRE		4.43	47	0.18	NS
		POST		4.26			

SCHOOL CODE:

100 = Target
200 = Target, I
300 = Non-Target
400 = Non-Target I
500 = Pilot

+: Pre-test > Post-test

FIGURE 8.3:
SIGNIFICANCE OF POSITIVE CHANGE IN
PRIMARY STUDENTS' MEASURED KNOWLEDGE OF OCCUPATIONAL DIFFERENCES

GRADE	SCHOOL		SCALE 0 2 4 6 8 10	MEAN SCORE	N	t-test	SIGNIFICANCE
2	103	PRE		8.43	7	-0.42	NS
		POST		8.57			
3	106	PRE		7.92	26	-1.53	.10
		POST		8.46			
K	201	PRE		7.56	18	-5.92	.005
		POST		9.61			
1	202	PRE		7.04	27	-3.75	.005
		POST		8.26			
1	301	PRE		8.04	24	-0.11	NS
		POST		8.08			
2	302	PRE		8.87	8	+1.00	NS
		POST		8.63			
K	401	PRE		5.96	25	-3.70	.005
		POST		7.56			
3	406	PRE		8.29	21	-0.49	NS
		POST		8.57			
3	409	PRE		8.08	12	-1.46	NS
		POST		8.75			
3	501	PRE		5.38	47	0.21	NS
		POST		5.15			

SCHOOL CODE:

100 = Target
200 = Target, I
300 = Non-Target
400 = Non-Target I
500 = Pilot

+: Pre-test > Post-test

FIGURE 8:4
SIGNIFICANCE OF POSITIVE CHANGE IN
PRIMARY STUDENTS' MEASURED KNOWLEDGE OF OCCUPATIONAL TOOLS

GRADE	SCHOOL		SCALE 0 2 4 6 8 10 12 14 16 18 20 22 24	MEAN SCORE	N	t-test	SIGNIFICANCE
2	103	PRE		19.57	7	-2.83	.025
		POST		21.86			
3	106	PRE		19.65	26	-3.79	005
		POST		21.77			
K	201	PRE		19.22	18	-5.99	.005
		POST		25.06			
1	202	PRE		14.59	27	-2.56	NS
		POST		16.48			
1	301	PRE		15.95	24	-0.59	NS
		POST		16.38			
2	302	PRE		22.13	8	-0.31	NS
		POST		22.38			
K	401	PRE		14.12	25	-4.58	.005
		POST		18.04			
3	406	PRE		19.33	21	-1.05	.15
		POST		20.91			
3	407	PRE		19.75	12	-2.39	.025
		POST		23.33			
3	501	PRE		14.23	47	.03	NS
		POST		14.15			

SCHOOL CODE:

100 = Target
200 = Target, I
300 = Non-Target
400 = Non-Target I
500 = Pilot

FIGURE 8.5:
SIGNIFICANCE OF POSITIVE CHANGE IN PRIMARY STUDENTS' COMPOSITE SCORE ON A MEASURE OF CAREER KNOWLEDGE

Differences Between Target and Non-Target (continued).

To aid rapid review, the t-test analyses between matched target and non-target classrooms at the same grade are displayed in a series of diagrams. The target schools are arrayed along the left-hand vertical margin of the diagram, and the non-target schools are arranged along the bottom, horizontal margin. The matched-comparisons are shown at the intersection of a target school and a non-target school class of the same grade level.

When possible, comparisons were made between Title I and non Title I schools also. When this caused a target school to be placed with non-targets in the diagram, or the converse, that situation was depicted by parentheses placed around the number designating the school so placed.

The diagrams in Figure 8.6 show comparisons among target and non-target primary grade pupils for the sub-tests, Occupational Similarities and Occupational Differences.

For Similarities, there was no significant difference between Kindergarten target and non-target, Title I students. In the first grade, the gain score of non-target students was greater than that of the target, Title I students. At the second grade, there was no significant difference between the gain scores for target and non-target schools. At Grade 3, the target school students achieved a significantly greater gain score than the non-target, Title I students.

On the Differences sub-tests, the first grade target, Title I students' gain was significantly greater than non-target students. At Grade 3, the non-target, Title I students made significantly greater gains than the target students. There were no significant differences between gains for target and non-target students in the Kindergarten and Grade 2.

The significance of difference in gain scores on Occupational Tools and Composite Career Knowledge are diagrammed in Figure 8.7.

With respect to Tools, there were no significant differences between target, Title I students and non-target, Title I students in the Kindergarten. There was no significant difference between target, Title I students and non-target students in Grade 1,between target students and non-target students in Grade 2, or between target students and non-target, Title I students in Grade 3.

With respect to Composite Knowledge, the gains made by target students in Grade 2 were significantly greater than those made by Grade 2 students in non-target schools. The other comparisons in the Figure yielded no significant differences.

CAREER KNOWLEDGE: OCCUPATIONAL SIMILARITIES

SCHOOL	GR	DIFF
201	K	1.3
202	1	-0.3
103	2	0.6
106	3	0.6

2=4
2<3
1=3
1>4

401	301	302	406/407	SCHOOL
K	1	2	3	GR
0.8	1.3	0.4	-0.2	DIFF

CAREER KNOWLEDGE: OCCUPATIONAL DIFFERENCES

SCHOOL	GR	DIFF
201	K	2.4
202	1	1.04
103	2	1.6
106	3	1.0

2=4
2>3
1=3
1<4

401	301	302	406/407	SCHOOL
K	1	2	3	GR
2.1	-0.9	0.1	2.4	DIFF

KEY:	
SCHOOL CODE	OUTCOME CODE
1=Target	> Significantly Greater
2=Target I	< Significantly Less
3=Non Target	= No Significant Difference
4=Non Target I	

FIGURE 8.6:
SIGNIFICANCE OF DIFFERENCE BETWEEN PRE AND POST TEST SCORES IN OCCUPATIONAL SIMILARITIES AND DIFFERENCES, PRIMARY GRADES

CAREER KNOWLEDGE: OCCUPATIONAL TOOLS

SCHOOL	GR	DIFF
201	K	2.06
202	1	1.2
103	2	0.14
106	3	0.54

2=4
2=3
1=3
1=4

401	301	302	406/407	SCHOOL
K	1	2	3	GR
1.6	0.4	0.25	0.42	DIFF

CAREER KNOWLEDGE: COMPOSITE TOTAL

SCHOOL	GR	DIFF
201	K	5.8
202	1	1.9
103	2	2.3
106	3	2.1

2=4
2=3
1>3
1=4

401	301	302	406/407	SCHOOL
K	1	2	3	GR
4.04	3.5	0.25	2.3	DIFF

KEY:	
SCHOOL CODE	OUTCOME CODE
1=Target	> Significantly Greater
2=Target I	< Significantly Less
3=Non Target	= No Significant Difference
4=Non Target I	

FIGURE 8.7:
SIGNIFICANCE OF DIFFERENCE BETWEEN PRE AND POST TEST SCORES
IN OCCUPATIONAL TOOLS AND OVERALL CAREER KNOWLEDGE, PRIMARY GRADES

Conclusion, Primary Career Knowledge.

By grades, irrespective of type of school, significant gains were made repeatedly by only Kindergarten and Primary 3 pupils. Student gains in target and non-target schools were about equal. No regular pattern was detected in Title I school and non-Title I school gain scores.

It was therefore concluded Objectives 4.1 and 4.3 were not met, to any practically-significant extent.

Differences Among Target, Non-Target and Pilot Schools.

Where it was possible to do so, a comparison was made on the mean scores, pre and post, for learners in the same grade in target schools, non-target schools, and a pilot school. The latter, it will be remembered, received services from a previous career education project and, thus, represented a school with a mature career education program.

The analysis technique was analysis of variance (ANOVA), simple randomized design.

In Table 8.3 three Primary 3 classroom's pre and post test scores on composite career knowledge are analyzed for significance. The summary data indicate that there were gains from pre to post for both the target and non-target third grade classrooms. For the pilot school primary 3 class, there was a pre-post decrease. The pilot school scores appeared to be less variable.

The analysis of variance indicated that there were highly significant differences on both the pre-test and the post-test. Accordingly, Dunnet's test was used to locate the source(s) of the difference. For the follow-up analysis, the pilot school was treated as a control.

The follow-up data indicated that on both the pre-test and the post-test, (1) the pilot class' score was significantly higher than either the target's or the non=target's, and (2) there was no significant difference between pre-test score and post-test score between the target and the non-target school.

Conclusion.

The result of this analysis was congruent with previous findings. It was inferred that the earlier decision (no difference between target and non-target scores) was correct.

TABLE 8.3:
SIGNIFICANCE OF DIFFERENCE AMONG GRADE 3 STUDENTS' OVERALL KNOWLEDGE OF CAREER EDUCATION IN TARGET, NON-TARGET AND PILOT SCHOOLS

DESCRIPTIVE SUMMARY

	TARGET		NON-TARGET		PILOT	
	PRE	POST	PRE	POST	PRE	POST
MEAN	3.89	4.15	3.76	3.95	9.73	9.31
SD	4.09	4.49	4.20	4.51	0.53	2.15
N	53		72		26	

ANALYSES

PRE TEST ANALYSIS

URCE OF RIANCE	SUM OF SQUARES	df	MEAN SQUARES	F
tween Grp.	753.4	2	376.7	26.1*
thin Grp.	2133.4	148	14.4	
TAL	2886.8	150		

POST TEST ANALYSIS

SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	F
Between	598.4	2	299.2	16.9*
Within	2607.2	148	17.6	
TOTAL	3205.6	150		

* Significant at .01

FOLLOW-UP ANALYSES

	GROUPS COMPARED	t	SIGNIFICANCE
Pre-Test	Control vs. Target	-5.84	<.01
	Control vs. Non-Target	-6.00	<.01
	Target vs. Non-Target	- .13	NS
Post-Test	Control vs. Target	-5.16	<.01
	Control vs. Non-Target	-5.36	<.01
	Target vs. Non-Target	-0.2	NS

Objective 4.4-- Learners in Grades K-3 in the target schools will demonstrate a significant increase in positive attitude toward self, others, school and work.

Objective 4.5-- The increment in postive attitude toward self, others, school and work will be analyzed for learners in K-3 in non-target schools.

Pre-Post Differences, By Grade Levels.

As was done with the data on career knowledge, the attitudinal data were analyzed for all primary grades, regardless of school classification.

Shown in Table 8.4 are the measures for statistical significance, applied to the pre-and-post mean scores for all pupils in the sample, according to grade level.

The analysis revealed no significant gains in measured attitude toward self and others.

In Table 8.5 is an analysis of the difference between pre- and- post test means on assessed attitudes toward school and work.

The analysis revealed no significant differences at any of the grade levels between the pre test mean and the post test mean.

Pre-Post Differences Within Target and Non-Target Schools.

The pre-and-post test differences for each primary grade in both target and non-target schools were analyzed by t-test.

The results of the analysis for attitude toward self are shown in in Figure 8.8. They show that significant gains were made in a Kindergarten, a Primary 1 class, a Primary 2 class, and a Primary 3 class in four different non-target schools (2 Title I and 2 non-Title I schools). The pre-post changes in four target school classrooms were not significantly different.

Similar data on attitude toward others are given in Figure 8.9. Therein it is shown that two primary classrooms in non-target schools scored significant gains, while no target classrooms did so.

The analysis for attitude toward school is summarized in Figure 8.10. Only in one non-target primary-grade classes (one primary 2 and one primary 3)was a significant gains obtained.

In Figure 8.11 the t-test analyses are summarized for attitude toward work. Significant, positive gains were made in two target school classes (a Primary 1 and a Primary 2).

TABLE 8.4:
SIGNIFICANCE OF DIFFERENCE BETWEEN PRIMARY GRADE PRE-POST TEST SCORES IN ATTITUDE TOWARD SELF AND OTHERS

MEASURE	GRADE	FORM	N	MEAN	SD	t	SIGNIFICANCE
ATTITUDE TOWARD SELF	K	PRE	59	3.31	5.56	-0.84	NS
		POST	59	3.59	5.76		
	1	PRE	162	3.28	5.68	-1.00	NS
		POST	162	3.62	6.30		
	2	PRE	143	6.42	6.57	-0.26	NS
		POST	143	6.52	6.72		
	3	PRE	234	2.36	4.97	-0.28	NS
		POST	234	2.44	5.16		
	ALL	PRE	598	3.67	5.84	-0.53	NS
		POST	598	3.85	6.16		
ATTITUDE TOWARD OTHERS	K	PRE	59	3.31	5.62	-1.59	NS
		POST	59	3.85	6.51		
	1	PRE	162	3.44	5.97	-0.83	NS
		POST	162	3.73	6.44		
	2	PRE	143	7.27	7.47	-0.02	NS
		POST	143	7.28	7.51		
	3	PRE	234	2.54	5.39	-0.03	NS
		POST	234	2.54	5.43		
	ALL	PRE	598	3.99	6.39	-0.38	NS
		POST	598	4.13	6.61		

TABLE 8.5:
SIGNIFICANCE OF DIFFERENCE BETWEEN PRIMARY GRADE PRE-POST TEST SCORES IN ATTITUDE TOWARD SCHOOL AND WORK

MEASURE	GRADE	FORM	N	MEAN	SD	t	SIGNIFICANCE
ATTITUDE TOWARD SCHOOL	1	PRE	162	7.44	9.02	0.31	NS
		POST	162	7.28	9.01		
	2	PRE	143	7.04	8.93	0.0	NS
		POST	143	7.04	9.01		
	3	PRE	234	7.78	8.93	0.83	NS
		POST	234	7.27	8.47		
	1-3	PRE	598	6.74	8.78	0.49	NS
		POST	598	6.50	8.59		
ATTITUDE TOWARD WORK	1	PRE	162	6.54	8.33	-.19	NS
		POST	162	6.64	8.54		
	2	PRE	143	6.22	8.29	-.55	NS
		POST	143	6.55	8.71		
	3	PRE	234	6.77	7.98	0.33	NS
		POST	234	6.63	7.94		
	1-3	PRE	598	5.91	7.99	-.09	NS
		POST	598	5.96	8.13		

GRADE	SCHOOL		SCALE 0 | 5 | 10 | 15	MEAN SCORE	N	t-test	SIGNIFICANCE
1	104	PRE		12.32	19	-1.15	.10
		POST		13.05			
2	101	PRE		13.60	19	+0.19	NS
		POST		13.00			
3	108	PRE		12.19	27	-0.43	NS
		POST		12.37			
2	205	PRE		12.72	18	0	NS
		POST		12.72			
1	301	PRE		12.91	23	-2.81	.005
		POST		14.74			
2	305	PRE		12.63	22	-1.90	.05
		POST		14.00			
K	404	PRE		12.28	29	-1.71	.10
		POST		12.41			
3	408	PRE		13.12	17	-2.25	.025
		POST		14.00			
2	501	PRE		6.59	47	-0.52	NS
		POST		6.68			

SCHOOL CODE:

100 = Target
200 = Target, I
300 = Non-Target
400 = Non-Target I
500 = Pilot

+: Pre-test > Post-test

FIGURE 8.8
SIGNIFICANCE OF POSITIVE CHANGE IN PRIMARY STUDENTS' MEASURED ATTITUDE TOWARD SELF

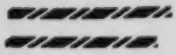
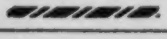
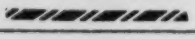
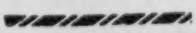
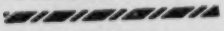
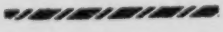
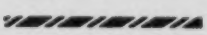
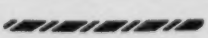
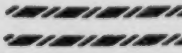
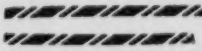
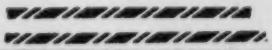
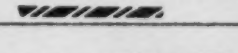
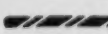
GRADE	SCHOOL		SCALE 0 | 5 | 10 | 15	MEAN SCORE	N	t-test	SIGNIFICANCE
1	104	PRE		13.89	19	-0.99	NS
		POST		14.42			
2	101	PRE		14.00	19	-0.16	NS
		POST		14.16			
3	108	PRE		12.67	27	-0.79	NS
		POST		13.15			
2	205	PRE		14.67	18	-0.23	NS
		POST		14.83			
1	301	PRE		12.78	23	-2.11	.025
		POST		14.34			
2	305	PRE		15.09	22	+0.51	NS
		POST		14.59			
K	404	PRE		12.86	29	-2.20	.05
		POST		14.17			
3	408	PRE		14.82	17	+0.75	NS
		POST		14.12			
2	501	PRE		6.59	47	-0.52	NS
		POST		6.68			

SCHOOL CODE:

100 = Target
200 = Target, I
300 = Non-Target
400 = Non-Target I
500 = Pilot

+: Pre-test > Post-test

FIGURE 8.9:
SIGNIFICANCE OF POSITIVE CHANGE IN
PRIMARY STUDENTS' MEASURED ATTITUDE TOWARD OTHERS

GRADE	SCHOOL		SCALE 5 | 10 | 15 | 20	MEAN SCORE	t-test	SIGNIFICANCE
1	102	PRE		17.67	- .76	NS
		POST		16.94		
1	107	PRE		16.45	- .86	NS
		POST		17.36		
2	105	PRE		18.50	- .77	NS
		POST		19.00		
3	204	PRE		19.75	- .76	NS
		POST		18.54		
3	206	PRE		17.67	+1.61	NS
		POST		16.48		
1	307	PRE		18.10	+ .95	NS
		POST		16.97		
2	304	PRE		17.42	-2.10	.025
		POST		18.68		
3	306	PRE		15.93	- .64	NS
		POST		15.29		
3	405	PRE		16.64	+2.17	.025
		POST		14.45		
2	501	PRE		9.24	+ .35	NS
		POST		8.49		

SCHOOL CODE:

100 = Target
200 = Target, I
300 = Non-Target
400 = Non-Target I
500 = Pilot

+: Pre-test >Post-test

FIGURE 8.10
SIGNIFICANCE OF POSITIVE CHANGE IN
PRIMARY STUDENTS' MEASURED ATTITUDE TOWARD SCHOOL

GRADE	SCHOOL		SCALE 5 | 10 | 15 | 20	MEAN SCORE	t-test	SIGNIFICANCE
1	102	PRE		15.11	-1.92	.10
		POST		15.89		
1	107	PRE		12.54	-1.84	.05
		POST		15.27		
2	105	PRE		17.38	-1.76	.05
		POST		19.00		
3	204	PRE		16.79	+ .66	NS
		POST		16.00		
3	206	PRE		14.09	- .52	NS
		POST		13.58		
1	307	PRE		17.66	+1.39	NS
		POST		15.62		
2	304	PRE		15.89	-1.11	.15
		POST		16.73		
3	306	PRE		15.18	+ .04	NS
		POST		15.16		
3	405	PRE		14.54	- .10	NS
		POST		14.64		
2	501	PRE		6.59	- .052	NS
		POST		6.68		

SCHOOL CODE:

100 = Target
200 = Target, I
300 = Non-Target
400 = Non-Target I
500 = Pilot

+: Pre-test > Post-test

FIGURE 8.11:
SIGNIFICANCE OF POSITIVE CHANGE IN
PRIMARY STUDENTS' MEASURED ATTITUDE TOWARD WORK

Objective 4.6-- Learners in Grades K-3 in Target schools will demonstrate significantly greater increases in positive attitudes than learners in the same grades in Non-Target Schools.

Pre-Post Differences Between Target and Non-Target Schools.

Direct, matched comparisons of target and non-target school pupils in Primary 1, two classes in Primary 2, and in Primary 3 are diagrammed in Figure 8.12. Among 6 comparisons, only one was significant: a Primary 2 non-target class attained a significantly higher gain score than the comparison classroom on attitude toward self.

Among the non-target classes, a non-Title I class' gain score significantly exceeded a Title I non-target class' score on the self scale.

Among 8 comparisons, no significant differences in gain scores were registered in the attitude toward others scale, as shown in Fig. 8.12.

The diagram in Figure 8.13 shows there were no significant differences in the gains made by a Primary 1 class, a Primary 2 class, and two Primary 3 classes, when each target and non-target classroom was matched against its counterpart on attitude toward school and attitude toward work.

Conclusion.

The data-trends were conclusive in indicating that primary grade students did not make substantial gains in attitude and that this failure to make gains was equally true for target and non-target schools.

Differences Among Target, Non-Target and Pilot Schools.

Primary 2 classes in a target, a non-target, and the pilot school received the tests on attitudes toward school and work. The descriptive summary indicated that the target and non-target pupils made pre-post gains on both tests, while the pilot students either decreased or gained only slightly. However, the pilot school scores were substially higher, and they appeared less variable.

The "source table" summarizing the between-group variance showed that both the pre and the post tests for school and for work were significantly different for the three schools.

The follow-up analysis identified the difference as follows: for both forms of both tests the pilot school class' scores were significantly greater than both the target class' scores and the non-target group's score. There were no significant differences between the target and non-target schools' pre-and-post scores.

Conclusion, Primary Grade Attitudes.

The data were straightforward and unambiguous. Target school participation in Project ICE was not related to significant, positive attitude gain scores.

ATTITUDE TOWARD SELF

SCHOOL	GR	DIFF						
104	1	.7	1=3					
101	2	0.2		1=2	1<3	1=4		
205	2	0			2=3			
108	3	.19					1=4	
(305)	(2)	.88				(3<4)		
			303	(205)	305	402	408	SCHOOL
			1	(2)	2	2	3	GR
			1.8	(0)	1.4	-1.0	.88	DIFF

ATTITUDE TOWARD OTHERS

SCHOOL	GR	DIFF						
104	1	.5	1=3					
101	2	.15		1=2	1=3	1=4		
205	2	.16			2=3	2=4		
108	3	.5					1=4	
(305)	(2)	-.5				3=4		
			303	205	305	402	408	SCHOOL
			1	2	2	2	3	GR
			1.6	.17	-.5	.46	-.7	DIFF

KEY:	
SCHOOL CODE	OUTCOME CODE
1=Target	> Significantly Greater
2=Target I	< Significantly Less
3=Non Target	= No Significant Difference
4=Non Target I	

FIGURE 8.12:
SIGNIFICANCE OF DIFFERENCE BETWEEN PRE AND POST TEST SCORES IN ATTITUDE TOWARD SELF AND OTHERS, PRIMARY GRADES

ATTITUDE TOWARD SCHOOL

SCHOOL	GR	DIFF
102/107	1	1.9
105	2	0.5
204/206	3	0.9
202/206	3	0.9
(306)	3	0.6

1=3				
	1=3			
		2=3	2=4	
			2=4	
			3=4	

307	304	306	405	SCHOOL
1	2	3	3	GRADE
1.1	1.3	0.6	2.2	DIFF

ATTITUDE TOWARD WORK

SCHOOL	GR	DIFF
102/107	1	1.9
105	2	1.6
204/206	3	-0.6
202/206	3	-0.6
(306)	3	- .04

1>3				
	1=3			
		2=3	2=4	
			2=4	
			3=4	

307	304	306	405	SCHOOL
1	2	3	3	GRADE
2.0	0.8		0.9	DIFF

KEY:	
SCHOOL CODE	OUTCOME CODE
1=Target	> Significantly Greater
2=Target I	< Significantly Less
3=Non Target	= No Significant Difference
4=Non Target I	

FIGURE 8.13:
SIGNIFICANCE OF POSITIVE CHANGE BETWEEN PRE AND POST TEST SCORES IN ATTITUDE TOWARD SCHOOL AND WORK, PRIMARY GRADES

TABLE 8.6:
SIGNIFICANCE OF DIFFERENCE AMONG GRADE 2 STUDENTS' ATTITUDES TOWARD SCHOOL AND WORK IN TARGET, NON-TARGET AND PILOT SCHOOLS

DESCRIPTIVE SUMMARY

	TARGET				NON-TARGET				PILOT			
	SCHOOL		WORK		SCHOOL		WORK		SCHOOL		WORK	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST	PRE	POST	PRE	POST
MEAN	7.05	7.29	6.6	7.2	6.76	7.25	6.2	6.5	18.05	16.52	14.7	14.9
SD	9.25	9.57	8.8	9.7	8.64	9.35	8.3	8.7	2.66	2.71	5.3	4.8
N	(42)				(49)				(21)			

ANALYSIS: SCHOOL

SOURCE OF VARIANCE	PRE SUM OF SQUARES	df	MEAN SQUARES	F	POST SUM OF SQUARES	df	MEAN SQUARES	F
Between Groups	212.60	2	1063.02	16.02*	1470.0	2	735.02	9.9*
Within Groups	7229.9	109	66.33		8099.9	109	74.3	
TOTAL	9355.9	111			9569.9	111		

ANALYSIS: WORK

SOURCE OF VARIANCE	PRE SUM OF SQUARES	df	MEAN SQUARES	F	POST SUM OF SQUARES	df	MEAN SQUARES	F
Between Groups	1205.3	2	602.6	9.3*	1136.9	2	568.4	7.7*
Within Groups	7036.4	109	64.5		7950.8	109	72.9	
TOTAL	8241.9	111			9087.7	111		

* Significant at .01

FOLLOW-UP ANALYSES

COMPARISONS	SCHOOL PRE t	SIG.	SCHOOL POST t	SIG.	WORK PRE t	SIG.	WORK POST t	SIG.
Control vs. Target	-11.0	<.01	-7.6	<.01	-8.1	<.01	-7.7	<.01
Control vs. Non-Target	-11.3	<.01	-7.65	<.01	-8.5	<.01	-8.4	<.01
Target vs. Non-Target	0.3	NS	.04	NS	0.4	NS	0.7	NS

MEASUREMENT OF STUDENT OUTCOME OBJECTIVES

Middle and Upper Elementary Grade Objectives, Career Knowledge

Shown in Figure 8.14 is a summary of the testing plan for students in Grades 4-8. Indicated in the figure is that 1374 middle grade and upper-elementary students in target and non-target schools received among them six tests in career knowledge and/or two attitudinal assessment instruments. The number of student respondents ranged from 108 receiving Workers' Activites to a high of 232, who received Work Awareness. Also shown in the Figure is the number of classes at each grade in each type of school which responded to each sub-test.

Objective 4.7-- Learners in Grades 4-8 in the target schools will will demonstrate a significant increase in career knowledge.

Objective 4.8-- An analysis will be made of the increase in career knowledge for non-target school learners in Gra 4-8.

Pre-Post Differences, By Grade Levels.

For the first approach to measuring this objective, the pre-post test differences for students at each grade level, regardless of school classification, were analyzed. The analysis technique was t-test for the significance of difference between mean scores.

The results are presented in Table 8.7. They show :

- Significant gains at Grade 4 were obtained for Work Awareness and Workers' Earnings.
- Significant gains at Grade 5 were found for Work Awareness.
- No significant gains were made at Grade 6.
- Significant gains at Grade 7 were obtained for: Workers' Activities Work Stories and Working Conditions.

The Grade 7 students' post test mean score was measureably higher than the pre-test for Occupational Training, but the difference was slightly less than the criterion for significance. For the subt-test on Occupational Training, there was a negative differential between pre-and-post test means for students at Grade 4.

	GRADES	WORK AWARENESS 45678	N	WORKER ACTIVITY 45678	N	WORK STORIES 45678	N	WORKING CONDITIONS 45678	N	OCCUPAT. TRAINING 45678	N	WORKERS' EARNINGS 45678	N	SELF; OTHERS 45678	N	SCHOOL; WORK; & ACHIEV. 45678	N
	SCHOOLS																
	102	X	15									X	17				
	103											X	29	X	29		
	104	X	13	X	13												
T	105							X	13								
A	106							X	30					X	30		
R	107					X	22	X	14	X	21					X	12
G	108	X	31									X	31				
E	201					X	24	X	23								
T	202									X	26			X	26		
	(I) 203					X	16					X	16				
	204	X	23					X	23								
	205	X	17							X	17						
	206			X	26	X	23					X	23			X	25
	301									X	21			X	23		
	302											X	19	X	19		
N	303	X	22	X	22												
O	304					X	26	X	28	X	26					X	27
N	305	X	18							X	18						
	306			X	24	X	22					X	22			X	24
T	307	X	9														
A	402					X	19	X	19								
R	403	X	35									X	34				
G	404			X	24											X	25
E	405	X	26					X	26								
T	(I) 406							X	12					X	12		
	407					X	24			X	24						
	408																
	501	X	19			X	21			X	19						
TOTAL CLASSES/ No. of Students		43201	232	12310	108	01233	197	12240	192	23110	172	20204	221	02220	139	12110	113

N= 1374

FIGURE 8.14:
TESTING PLAN: GRADES 4 THROUGH 8

TABLE 8.7:
SIGNIFICANCE OF DIFFERENCE BETWEEN ELEMENTARY GRADES
PRE-POST TEST SCORES IN CAREER KNOWLEDGE

MEASURE	GRADE	FORM	N	MEAN	SD	t	SIGNIFICANCE LEVEL
WORK AWARENESS	4	Pre	64	7.56	2.86	-3.24	.005*
		Post	64	10.41	3.5		
	5	Pre	59	9.49	3.5	-2.58	.01*
		Post	58	11.35	3.5		
N = 186	6	Pre	32	13.53	2.9	- .18	NS
		Post	32	13.69	3.8		
	8	Pre	31	15.00	2.6	- .81	NS
		Post	31	15.52	2.2		
	5	Pre	47	8.62	3.2	-1.34	.10
WORKER ACTIVITIES		Post	47	9.48	2.6		
	6	Pre	31	11.61	2.8	- .69	NS
N = 102		Post	31	12.13	[illegible].0		
	7	Pre	24	11.33	2.5	-2.85	.01*
		Post	24	13.16	2.6		
	5	Pre	22	9.14	2.3	- .62	NS
		Post	23	9.52	2.4		
WORK STORIES	6	Pre	44	9.29	2.8	.74	NS
		Post	45	9.69	2.2		
	7	Pre	67	9.78	2.6	-3.30	.005*
N = 193		Post	69	11.10	1.8		
	8	Pre	60	11.03	2.4	-1.39	
		Post	60	11.53	2.2		
	4	Pre	13	5.15	1.9	- .84	NS
		Post	13	5.83	2.0		NS
WORKING CONDITIONS	5	Pre	46	6.63	1.9	- .88	NS
		Post	46	7.00	2.2		
	6	Pre	39	7.72	3.2	- .67	NS
		Post	39	8.17	2.7		
N = 179	7	Pre	81	7.15	2.2	-5.56	.005*
		Post	81	8.93	2.4		

* Significant at Specified Criterion Level

TABLE 8.7
(Continued)

MEASURE	GRADE	FORM	N	MEAN	SD	t	SIGNIFICANCE LEVEL
	4	Pre	55	4.78	2.6	1.63	.10 (Negative
		Post	55	3.98	1.8		Change)
OCCUPATIONAL							
TRAINING	5	Pre	44	4.73	1.9	.57	NS (Negative
		Post	44	4.49	1.8		Change)
	6	Pre	44	4.55	1.8	- .14	NS
N = 169		Post	44	4.61	1.8		
	7	Pre	26	5.35	2.2	-1.45	.10
		Post	26	6.15	1.9		
	4	Pre	13	7.15	2.1	-5.69	.005*
		Post	13	11.76	2.1		
WORKERS'	5	Pre	33	9.30	2.1	.11	NS
EARNINGS		Post	33	9.35	2.7		
	6	Pre	44	9.46	2.6	.77	NS (Negative
N = 181		Post	44	8.97	3.2		Change)
	8	Pre	91	10.66	2.2	- .38	NS (Negative
		Post	90	11.28	2.4		Change)

* Significant at Specified Criterion Level

The data indicate that the greatest impact of the program (as determined by gains on test scores) occurred at Grade 7. Some program impact was noted at Grade 4 and Grade 5, also. There were no measureable outcomes at the sixth grade.

Pre-Post Differences Within Target and Non-Target Schools.

The second approach to measuring the objectives was to examine change-scores for each grade within target and non-target schools.

Those data are summarized in Tables 8.8 through 8.13.

The data Table 8.8 show that significant change-scores were obtained in two target-school fourth grades and two non-target classes in Grades 4 and 5 on a measure of ability to relate children's activities to work done by adult workers.

TABLE 8.8:
SIGNIFICANCE OF PRE-POST DIFFERENCES IN ELEMENTARY STUDENTS' MEASURED KNOWLEDGE, WORK AWARENESS BY TYPE OF SCHOOL AND GRADE LEVEL

SCHOOL	GRADE	N	FORM	MEAN	SD	t	SIGNIFICANCE
Target							
102	4	15	Pre	6.73	2.73	-5.24	.005*
		15	Post	13.06	3.02		
104	6	13	Pre	12.92	3.10	-0.11	NS
		13	Post	13.06	3.02		
108	8	31	Pre	15.00	2.58	- .86	NS
		31	Post	15.52	2.17		
204	5	23	Pre	9.91	3.07	-1.58	.10
		23	Post	11.35	3.35		
205	4	17	Pre	6.71	2.42	-1.74	.05*
		17	Post	8.94	2.61		
Non-Target							
305	4	18	Pre	7.39	2.17	-1.34	.10
		18	Post	8.78	3.34		
307	5	9	Pre	11.56	2.19	- .87	NS
		9	Post	12.78	3.23		
303	6	22	Pre	14.20	2.60	- .48	NS
		22	Post	14.64	3.30		
403	4	35	Pre	4.94	2.43	- .34	NS
		35	Post	5.28	2.26		
405	5	26	Pre	8.35	3.09	-2.92	.005*
		26	Post	10.92	3.08		
501	4	19	Pre	9.05	3.17	-1.89	.05*
		19	Post	11.00	3.15		

* Significant at Specified Criterion Level

Work Stories.

The ability to relate one's interests, abilities, hobbies to the work world was measured by the sub-test, Work Stories. The results are shown in Table 8.9. Only at Grade 7 (in both a target school and a non-target school) was a significant gain between mean scores obtained.

Workers' Activities.

Knowledge of what workers in various occupations do was measured through this sub-test. The findings from an analysis of pre-post test differences are shown in Table 8.10. The only significant difference among grades in both types of school was in Grade 7, target school.

Working Conditions.

Characteristics of working in various occupations (noise; amount of physical exertion; working with people, data, or things) was the topic of this measure. The pre-post test performance of students in Grades 4-8 in target and non-target schools is given in Table 8.11.

Significant increases in mean scores were attained by Grade 5 students in both target and non-target schools, and Grade 7 students, target schools.

Occupational Training.

The amount of training generally needed to enter various occupations was the career knowledge area tested through this instrument. A summary of the findings for Grade 4-8 students in target and non-target schools is presented in Table 8.12. The data show that only at Grade 4, non-target schools, was a significant difference obtained.

Workers' Earnings.

The relative amounts one could expect to earn through following various career paths was measured pre and post for Grade 4-8 students in both types of school. The data are shown in Table 8.13. Significant gains were attained in Grades 4 and 8, target schools.

Conclusion.

Twenty-four comparisons were made between pre-and-post test means of target students in Grades 4-8 on 6 measures of career knowledge. Only 6, or 25% yielded significant gains. For target school students, only 5 or 21% of the comparisons showed attainment of significant gains.

It was concluded that the objective was not met, as (1) only a small percent of target school classes achieved gains, and (2) about the same percentage of non-target classes achieved significant gains as target classes.

TABLE 8.9:
SIGNIFICANCE OF PRE-POST DIFFERENCES IN ELEMENTARY STUDENTS' MEASURED ABILITY TO RELATE INTERESTS, ABILITIES, HOBBIES TO OCCUPATIONS, BY TYPE OF SCHOOL AND GRADE LEVEL

SCHOOL	GRADE	N	FORM	MEAN	SD	t	SIGNIFICANCE
Target							
107	6	22	Pre	10.68	1.84	.42	NS (Negative Change)
		22	Post	10.41	2.32		
201	7	24	Pre	9.00	2.81	-3.91	.005*
		24	Post	11.54	1.41		
203	8	16	Pre	11.05	1.95	- .50	NS
		16	Post	11.44	2.47		
206	8	23	Pre	10.44	2.25	-1.46	.10 (Negative Change)
		23	Post	11.30	1.57		
Non-Target							
304	7	26	Pre	10.73	2.12	- .15	NS
		26	Post	10.85	1.73		
306	8	22	Pre	11.82	2.9	- .12	NS
		22	Post	11.91	2.5		
402	7	19	Pre	9.56	2.48	-1.89	.05*
		19	Post	11.05	2.32		
407	6	24	Pre	8.08	2.9	-1.13	.15
		24	Post	8.96	2.3		
501	5	21	Pre	9.19	2.38	- .61	NS
		21	Post	9.62	2.04		

* Significant at Specified Criterion Level

TABLE 8.10:
SIGNIFICANCE OF PRE-POST DIFFERENCES IN ELEMENTARY STUDENTS' MEASURED KNOWLEDGE OF WORKERS' ACTIVITIES, BY TYPE OF SCHOOL AND GRADE LEVEL

SCHOOL	GRADE	N	FORM	MEAN	SD	t	SIGNIFICANCE
Target							
104	6	13	Pre	11.00	2.16	-1.17	.15
		13	Post	11.62	3.10		
206	5	23	Pre	7.91	3.32	-1.44	.10
		23	Post	9.83	6.49		
Non-Target							
303	6	22	Pre	11.32	3.35	- .79	NS
		22	Post	11.91	3.09		
306	5	24	Pre	9.25	2.92	- .49	NS
		24	Post	9.50	2.41		
404	7	24	Pre	11.54	2.30	-2.27	.025*
		24	Post	13.16	2.51		

TABLE 8.11:
SIGNIFICANCE OF PRE-POST DIFFERENCES IN ELEMENTARY STUDENTS' MEASURED KNOWLEDGE OF WORKING CONDITIONS OF VARIOUS OCCUPATIONS, BY TYPE OF SCHOOL AND GRADE LEVEL

SCHOOL	GRADE	N	FORM	MEAN	SD	t	SIGNIFICANCE
Target							
107	4	14	Pre	4.71	2.37	- .96	NS
		14	Post	5.53	1.89		
105	6	13	Pre	8.54	2.60	- .84	NS
		13	Post	9.31	1.93		
106	7	30	Pre	8.03	2.16	- .96	NS
		30	Post	8.55	1.97		
204	5	23	Pre	6.6	1.78	-2.53	.01*
		23	Post	6.9	2.02		
201	7	23	Pre	5.91	2.02	-10.04	.005*
		23	Post	11.33	1.61		
Non-Target							
304	6	28	Pre	7.54	3.06	-1.41	.10
		28	Post	8.57	2.06		
405	5	26	Pre	6.62	2.21	-2.20	.025*
		26	Post	7.70	1.10		
402	7	19	Pre	7.12	2.18	- .58	NS
		19	Post	7.57	2.50		
406	7	12	Pre	7.50	1.68	-1.59	.10
		12	Post	8.50			

* Significant at Specified Criterion Level

TABLE 8.12:
SIGNIFICANCE OF PRE-POST DIFFERENCES IN ELEMENTARY STUDENTS' MEASURED KNOWLEDGE OF TRAINING NEEDED FOR VARIOUS OCCUPATIONS, BY TYPE OF SCHOOL AND GRADE LEVEL

SCHOOL	GRADE	N	FORM	MEAN	SD	t	SIGNIFICANCE
Target							
107	6	21	Pre	5.04	1.75	- .21	NS
		21	Post	5.13	1.79		
205	4	17	Pre	3.12	1.58	- .05	NS
		17	Post	3.17	1.97		
202	5	26	Pre	4.5	2.1	0.	NS
		26	Post	4.5	1.9		
Non-Target							
305	4	18	Pre	3.67	1.82	-2.46	.025*
		18	Post	5.12	1.67		
407	6	24	Pre	3.92	1.67	-0.32	NS
		24	Post	4.08	1.70		
501	4	19	Pre	7.89	1.05	7.72	(Significant
		19	Post	3.80	1.60		Negative Change)

* Significant at Specified Criterion Level

TABLE 8.13:
SIGNIFICANCE OF PRE-POST DIFFERENCE IN ELEMENTARY STUDENTS' MEASURED KNOWLEDGE OF WORKERS' EARNINGS BY TYPE OF SCHOOL AND GRADE LEVEL

SCHOOL	GRADE	N	FORM	MEAN	SD	t	SIGNIFICANCE
Target							
102	4	17	Pre	7.24	2.1	-5.40	.005*
		17	Post	11.92	2.2		
103	6	29	Pre	9.07	2.53	.22	NS (Negative Change)
		29	Post	8.90	3.40		
108	8	31	Pre	10.87	2.5	-1.03	.20
		31	Post	11.50	2.8		
203	8	16	Pre	10.81	2.16	- .81	NS
		16	Post	11.56	2.5		
206	8	23	Pre	10.39	2.19	-1.95	.05*
		23	Post	11.60	2.02		
Non-Target							
307	5	10	Pre	9.50	1.8	- .12	NS
		10	Post	9.63	2.8		
302	6	19	Pre	9.95	2.4	1.30	NS (Negative Change)
		19	Post	8.79	2.9		
306	8	22	Pre	10.59	1.9	.08	NS (Negative Change)
		22	Post	10.54	2.1		

* Significant at Specified Criterion Level

Pre-Post Differences Between Target and Non-Target Schools.

Objective 4.9-- Target school learners in Grades 4-8 will attain a significantly greater increase in career knowledge than learners in the same grades in non-target schools.

In measurement of this objective, the difference in pre-post mean scores for learners in target and non-target schools were matched by grade levels. The significance of those differences was analyzed through t-test.

Those comparisons are displayed in Figures 8.15 through 8.17. The format of the diagrams in the figures is the same as that used to present similar data for primary grade students.

Work Awareness.

There were significant differences on 4 out of 7 direct, matched comparisons. In one instance, a target school fourth grade attained a significantly greater difference score than a non-target school fourth grade. However, at Grade 5, the non-target school attained a significantly greater difference score than the target school.

With respect to Title I versus non-Title I schools, there was one instance where a Grade 4 non-Title I school scored significantly greater gains than the Title I target school at the same grade. However, at Grade 5, the converse occurred.

There were no significant differences in three of the comparisons.

Working Conditions.

Of 5 comparisons among schools on this test, there was only one significant difference between gain scores for target and non-target school classrooms. At Grade 7, the gains by target students were greater than those of non-target students. Also at Grade 7, a Title I target school made significantly greater gains than a non-Title I target school.

Those outcomes are depicted in Figure 8.15.

Occupational Training.

Target and non-target school gains at Grades 4 and 5 were analyzed. There were no significant differences.

Worker Activities.

A significant difference was found for 1 of the 2 comparisons made at Grades 5 and 6. In that comparison, a fifth grade target school made significantly greater gains than the counterpart non-target school. Also,

WORK AWARENESS

SCHOOL	GR	DIFF
104	4	6.7
205	4	2.2
206	5	1.0
104	6	0.9
(307)	(5)	(1.2)

1>2	1>3				
	2=3				
		2<4	2=3		
				1=3	
		3<4			

(205)	305	405	307	303	SCHOOL
(4)	4	5	5	6	GRADE
(2.2)	1.6	2.5	1.2	0.3	DIFF

WORKING CONDITIONS

SCHOOL	GR	DIFF
204	5	0.3
105	6	0.8
106	7	.5
201	7	5.3

	2=4			
		1=3		
1<2			1=4	
			2>4	

(201)	405	304	402+406	SCHOOL
(7)	5	6	7	GRADE
(5.3)	1.1	.61	.7	DIFF

KEY:	
SCHOOL CODE	OUTCOME CODE
1=Target	> Significantly Greater
2=Target I	< Significantly Less
3=Non Target	= No Significant Difference
4=Non Target I	

FIGURE 8.15
SIGNIFICANCE OF DIFFERENCE BETWEEN TARGET AND NON-TARGET SCHOOLS IN PRE-POST GAIN SCORES IN CAREER KNOWLEDGE, GRADES 4-8

OCCUPATIONAL TRAINING

SCHOOL	GR	DIFF
205	4	.24
202	5	-.14

2=3		
	2=3	
305	301	SCHOOL
4	5	GRADE
1.4	-.6	DIFF

WORKER ACTIVITIES

SCHOOL	GR	DIFF
206	5	1.6
104	6	.5

2>3		
	1=3	
306	303	SCHOOL
5	6	GRADE
.3	.6	DIFF

KEY:	
SCHOOL CODE	OUTCOME CODE
1=Target	> Significantly Greater
2=Target I	< Significantly Less
3=Non Target	No Significant Difference
4=Non Target I	

FIGURE 8.16:
SIGNIFICANCE OF DIFFERENCE BETWEEN TARGET AND NON-TARGET SCHOOLS IN PRE-POST GAIN SCORES IN CAREER KNOWLEDGE, GRADES 4-8

WORK STORIES

SCHOOL	GR	DIFF
107	6	-.25
201	7	2.6
206	8	.7
(304)	(8)	0.0

1=4				
	2>3	2=4		
			2=3	
		3>4		

407	304	402	306	SCHOOL
6	7	7	8	GRADE
.9	0.0	1.5	.1	DIFF

WORKERS' EARNINGS

SCHOOL	GR	DIFF
103	6	-.2
203	8	1.0
108	8	.6

	1=3		
		2>3	
1=2		1=3	

(203)	302	306	SCHOOL
(8)	6	8	GRADE
1.0	-1.0	-0.05	DIFF

KEY:	
SCHOOL CODE	OUTCOME CODE
1=Target	> Significantly Greater
2=Target I	< Significantly Less
3=Non Target	= No Significant Difference
4=Non Target I	

FIGURE 8.17:
SIGNIFICANCE OF DIFFERENCE BETWEEN TARGET AND NON-TARGET SCHOOLS IN PRE-POST GAIN SCORES IN CAREER KNOWLEDGE GRADES 4-8

that comparison represented a significant gain for a Title I school over a non-Title I school.

Those results are shown in Figure 8.16.

Work Stories.

Between target and non-target schools, only 1 of 5 comparisons yielded significant differences. At the seventh grade level, the target school classroom attained significantly greater gains than the matched non-target school. Within the non-target schools, a non-Title I Grade 7 class made significantly greater gains than the non-target, non-Title I students at the same grade.

Workers Earnings.

At Grade 8, the target school students' gain scores were significantly greater than those of the non-target students. There were no significant differences among the three other comparisons made on this sub-test.

Conclusion.

There were 24 direct, grade-by-grade comparisons made between target and non-target school classes on 6 measures of career knowledge topics. No significant differences were found for 15 of those comparisons (63%). 5 comparisons (21%) favored the target schools over the non-target schools, while only 1 comparison (4%) favored the non-target classroom over the corresponding target classroom. The 3 other comparisons were within target and non-target schools, and they were comparisons of Title I schools against non-Title I schools.

The data showed that there were no significant differences between target and non-target gain scores in slightly more than 60% of the cases. In the 25% of the comparisons where a measurable difference was discernable, the tendency was for target schools to attain significantly greater gains than the non-target. However, the percentage of this occurrence was so small, the evaluative judgment was that the objective was not met.

Differences Among Target, Non-Target and Pilot Schools.

Students in Grade 4 classrooms in target and non-target schools and the pilot school completed the pre-and-post test on Work Awareness. To determine the significance of difference among pre-post test means, the data were analyzed through analysis of variance (ANOVA), simple randomized design.

The result is summarized in Table 8.14.

From the descriptive summary, it can be seen that the post-test mean score exceeded the pre-test at this grade for all three types of schools. Moreover, all scores appeared about equally variable.

TABLE 8.14:
SIGNIFICANCE OF DIFFERENCE AMONG GRADE 4 STUDENTS' KNOWLEDGE OF WORK AWARENESS IN TARGET, NON-TARGET AND PILOT SCHOOLS

DESCRIPTIVE SUMMARY

	TARGET		NON-TARGET		PILOT	
	PRE	POST	PRE	POST	PRE	POST
MEAN	6.77	13.46	7.47	9.00	9.12	10.91
ST. DEV.	2.95	3.17	2.21	3.29	3.35	3.09
N	13	13	17	17	17	17

ANALYSIS OF VARIANCE

SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	F	SUM OF SQUARES	df	MEAN SQUARES	F
Between Groups	44.92	2	22.46	2.73	146.64	2	73.32	7.19*
Within Groups	362.31	44	8.63		448.17	44	10.18	
TOTAL	407.23	46			594.81	46		

Not Significant

* Significant at .01

FOLLOW-UP ANALYSIS

COMPARISONS	PRE-TEST t-test	PRE-TEST Significance	POST-TEST t-test	POST-TEST Significance
Pilot vs. Target	-3.98	<.01	3.87	<.01
Pilot vs. Non-Target	-2.79	<.01	-2.90	<.01
Target vs. Non-Target	-1.18	NS	6.77	<.01

The analyses in the "source table" show: (1) There was no measurably significant difference among scores on the pre-test; (2) There was a highly significant difference among the scores on the post-test.

Through the follow-up procedure, the differences were located as follows: (1) On the pre-test, the pilot school mean score was significantly higher than either the target or non-target school; (2) On the post-test, the pilot school mean was significantly greater than the non-target school; and (3) on the post-test, the target mean score was significantly greater than either the pilot or the non-target.

At the same grade level, it was possible to compare classes in target, non-target, and pilot schools on the measure, Occupational Training.

The data shown in Table 8.15 indicate that the target classroom made only a slight gain, the non-target classroom made a substantial pre-post gain, and a substantial decrease pre-post was made in the pilot school. There appeared to be a substantial amount of variation among all scores.

The analysis of variance indicated highly significant differences in between-group mean scores.

The follow-up analyses revealed that the differences were: (1) On the pre-test, the pilot school mean was significantly higher than either the target or non-target school; (2) On the post-test, there was no significant difference between the pilot school mean and the target school mean; and (3) On the post-test, the non-target school mean was significantly greater than either the target school or the pilot school mean score.

Conclusion.

In the two analyses made, the pilot school class scored significantly higher on the pre-test than either target or non-target students in the same grade. However, by the post-test, either the target classroom or the non-target classroom exceeded the pilot school post-test score.

These data suggested that the pilot school students had retained an amount of career knowledge from their participation in an earlier career education project. However, those initial gains were offset by the programs delivered in target and non-target classrooms during the term of Project ICE.

With respect to the relative differences between target and non-target schools, there were no findings to contradict the evaluative judgment that Objective 4.9 had not been met.

MEASUREMENT OF STUDENT OUTCOMES OBJECTIVE (cont.)

Middle and Upper Grade Objectives, Attitudes

Objective 4.10 -- Learners in the target schools in Grades 4-8 will attain significant gains in positive attitudes towards self, others, school, work, and achievement motivation.

TABLE 8.15
SIGNIFICANCE OF DIFFERENCE AMONG GRADE 4 STUDENTS' KNOWLEDGE OF OCCUPATIONAL TRAINING IN TARGET, NON-TARGET AND PILOT SCHOOLS

DESCRIPTIVE SUMMARY

	TARGET		NON-TARGET		PILOT	
	PRE	POST	PRE	POST	PRE	POST
MEAN	3.14	3.41	3.71	5.13	7.88	3.65
ST. DEV.	1.45	1.89	1.86	1.20	1.05	1.57
N	22	22	17	16	17	17

ANALYSIS OF VARIANCE

SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	F	SUM OF SQUARES	df	MEAN SQUARES	F
Between Groups	239.52	2	119.75	53.74*	30.03	2	15.01	5.70*
Within Groups	115.86	52	2.23		136.95	52	2.63	
TOTAL	355.38	54			166.98	54		

* Significant at .01

FOLLOW-UP ANALYSIS

COMPARISONS	PRE-TEST t-test	PRE-TEST Significance	POST-TEST t-test	POST-TEST Significance
Pilot vs. Target	-15.04	<.01	-0.78	NS
Pilot vs. Non-Target	-13.23	<.01	-4.78	<.01
Target vs. Non-Target	- 1.81	NS	-5.57	<.01

Objective 4.11 -- An analysis will be made of the increments in positive attitudes toward self, others, school, work, and achievement motivation among learners in Grades 4-8 in non-target schools.

Pre-Post Differences, By Grade Levels.

The mean scores on pre and post test of career education-related attitudes for students at each grade level, irrespective of type of school, were analyzed through t-test.

The results for attitudes toward self and attitudes towards others are presented in Table 8.16. The analyses revealed there were no significant differences at any of the grade levels.

Similar data for the sub-tests positive attitude towards school, positive attitude toward work, and measured level of achievement motivation are shown in Table 8.17.

Of the 12 comparisons shown in the Table, the only measurably significant gain was found for Grade 4 on the topic attitude toward school.

Pre-post Differences Within Target and Non-Target Schools.

From measuring changes at grade levels, the analysis was carried forward to grade levels within target and non-target schools.

Positive Self-Attitude.

The data for this sub-test is shown in Table 8.18.

A significant gain was registered by a Grade 5, non-target class. None of the five other comparisons yielded significant changes.

Attitude Toward Others.

The analysis of the increases in mean score within target and non-target schools on this measure is displayed in Table 8.19.

There were no significant pre-post test differences on the measurement, attitude toward others.

Attitude Toward School.

The pre-post test means and related analyses for target and non-target students, Grades 4-7, are shown in Table 8.20.

The data show that there was a significant gain for (1) A Grade 4 target school and (2) A Grade 5 non-target school. It was interesting to note that a negative change occurred within a Grade 6 non-target classroom.

TABLE 8.16:
SIGNIFICANCE OF DIFFERENCE BETWEEN ELEMENTARY GRADES' PRE-POST TEST SCORES IN ATTITUDES TOWARD SELF AND OTHERS

MEASURE	GRADE	FORM	N	MEAN	SD	t	SIGNIFICANCE LEVEL
ATTITUDE TOWARD SELF N = 133	4	Pre	5	7.60	3.9	- .14	NS
		Post	5	8.40	2.9		
	5	Pre	44	11.84	2.9	-1.11	.15
		Post	45	12.53	2.9		
	6	Pre	44	12.41	2.9	- .03	NS
		Post	42	12.43	3.7		
	7	Pre	40	12.05	2.8	.005	NS
		Post	40	12.00	3.2		
ATTITUDE TOWARD OTHERS N = 133	4	Pre	5	13.40	4.8	.32	NS
		Post	5	11.60	5.5		
	5	Pre	44	13.75	3.0	- .85	NS
		Post	45	14.27	3.2		
	6	Pre	44	14.93	2.5	.27	NS
		Post	43	14.76	2.5		
	7	Pre	40	14.83	2.4	.05	NS
		Post	40	14.37	2.6		

TABLE 8.17:
SIGNIFICANCE OF DIFFERENCE BETWEEN ELEMENTARY GRADES' PRE-POST TEST SCORES IN POSITIVE ATTITUDE TOWARD SCHOOL, WORK, AND ACHIEVEMENT

MEASURE	GRADE	FORM	N	MEAN	SD	t	SIGNIFICANCE LEVEL
ATTITUDE TOWARD SCHOOL N = 107	4	Pre	12	18.83	5.37	-2.64	.025*
		Post	12	23.33	2.57		
	5	Pre	47	20.40	5.14	- .62	NS
		Post	46	21.06	4.59		
	6	Pre	24	17.50	4.71	1.40	NS (Negative Change)
		Post	24	15.86	6.38		
	7	Pre	24	18.92	5.41	- .51	NS
		Post	24	19.58	4.72		
ATTITUDE TOWARD WORK N = 106	4	Pre	11	16.09	4.5	1.51	NS (Negative Change)
		Post	12	13.50	2.6		
	5	Pre	47	18.06	3.9	5.00	NS (Negative Change)
		Post	46	14.56	3.1		
	6	Pre	24	16.88	4.4	.02	NS
		Post	27	16.81	2.8		
	7	Pre	24	18.79	3.4	3.84	NS (Negative Change)
		Post	24	15.52	3.1		
ACHIEVEMENT NEED N = 107	4	Pre	12	12.53	3.5	- .36	NS
		Post	12	13.08	3.2		
	5	Pre	47	13.26	3.2	1.63	NS (Negative Change)
		Post	47	12.26	3.4		
	6	Pre	24	9.08	3.2	.69	NS
		Post	23	8.39	3.9		
	7	Pre	24	9.92	2.57	.56	NS
		Post	25	9.44	3.30		

* Significant at Specified Criterion Level

TABLE 8.18:
SIGNIFICANCE OF PRE-POST DIFFERENCE IN ELEMENTARY STUDENTS' MEASURED POSITIVE SELF-ATTITUDE, BY TYPE OF SCHOOL AND GRADE LEVEL

SCHOOL	GRADE	N	FORM	MEAN	SD	t	SIGNIFICANCE
103	6	29	Pre	13.0	2.8	- .59	NS
		28	Post	13.32	3.5		
106	7	30	Pre	12.17	2.8	- .77	NS
		30	Post	11.63	3.5		
202	5	26	Pre	11.58	3.4	- .02	NS
		26	Post	11.85	3.4		
301	5	23	Pre	11.00	3.05	-1.90	.05*
		23	Post	11.26	2.73		
302	6	.9	Pre	11.37	2.9	-1.06	NS
		8	Post	11.11	3.4		
406	7	12	Pre	11.33	3.3	-1.14	NS
		12	Post	12.50	3.2		

* Significant at Specified Criterion Level

TABLE 8.19:
SIGNIFICANCE OF PRE-POST DIFFERENCE IN ELEMENTARY STUDENTS' MEASURED POSITIVE ATTITUDE TOWARD OTHERS, BY TYPE OF SCHOOL AND GRADE LEVEL

SCHOOL	GRADE	N	FORM	MEAN	SD	t	SIGNIFICANCE
103	6	29	Pre	14.97	2.3	.34	NS
		29	Post	14.93	2.4		
106	7	30	Pre	14.87	2.7	.85	NS
		30	Post	14.33	2.7		
202	5	27	Pre	13.98	3.2	.05	NS
		27	Post	13.59	3.9		
301	5	23	Pre	13.65	3.2	1.30	NS
		23	Post	14.43	2.8		
302	6	19	Pre	14.79	2.7	1.20	NS
		18	Post	14.00	2.3		
406	7	12	Pre	14.83	1.6	.13	NS
		12	Post	14.76	2.7		

TABLE 8.20:
SIGNIFICANCE OF PRE-POST DIFFERENCE IN ELEMENTARY STUDENTS' MEASURED POSITIVE ATTITUDE TOWARD SCHOOL BY TYPE OF SCHOOL AND GRADE LEVEL

SCHOOL	GRADE	N	FORM	MEAN	SD	t	SIGNIFICANCE
107	4	12	Pre	18.83	5.4	-2.86	.05*
		12	Post	23.33	2.6		
206	5	25	Pre	23.76	3.2	1.38	NS
		25	Post	22.46	3.5		
306	5	24	Pre	17.17	4.47	-2.49	.01*
		24	Post	14.26	4.78		
304	6	27	Pre	17.33	4.9	4.18	NS (Negative Change)
		27	Post	14.48	6.8		
404	7	25	Pre	19.00	5.3	- .76	NS
		24	Post	19.80	4.7		

* Significant at Specified Criterion Level

Positive Attitude Toward Work.

The summary of data for significance measures on pre-post mean scores on this scale are shown in Table 8.21.

From the Table, it can be observed that a significant, positive change took place in a Grade 5, target classroom.

Achievement Need.

The data collected in measurement of this scale are given in Table 8.22.

No significant differences were found. It was interesting to note that there was a negative change in a Grade 5, target classroom. For this scale, that change (although not significant) was considered healthy. It may be remembered that, for this scale, moderate scores are preferred to extreme scores.

Conclusion.

To measure this objective, 27 comparisons were made of pre and post test scores for elementary classrooms within both target and non-target schools. Of those comparisons, 27 (or 85%) revealed no significant pre-post test differences. Of those comparisons in which significant differences were found, 2 favored the target schools and 2 favored the non-target schools (7% each).

Those data were unequivocal. Objective 4.10 was not met.

Pre-Post Differences Between Target and Non-Target Schools.

Objective 4.12 -- Target school learners in Grades 4-8 will attain significantly greater score increments in positive attitudes toward self, others, school, work, and achievement than learners in the same grades in non-target schools.

For this analysis, direct matched comparisons between target and non-target students in Grades 5, 6, and 7 were made from the attitude scales: attitude towards self and attitude towards others.

To measure the difference between target and non-target difference scores in the scales, school, work, and achievement comparisons were made between a fifth grade classroom in a target school and a fifth grade class in a non-target school. The comparisons are diagrammed in Figure 8.18.

The data show:

- There were no significant differences between students at the two types of school on attitude towards self.
- There were no significant differences among students at three grades in the two types of school on the scale, attitude towards others.

TABLE 8.21:
SIGNIFICANCE OF PRE-POST DIFFERENCE IN ELEMENTARY STUDENTS' MEASURED POSITIVE WORK INDEX, BY TYPE OF SCHOOL AND GRADE LEVEL

SCHOOL	GRADE	N	FORM	MEAN	SD	t	SIGNIFICANCE
107	4	11	Pre	16.09	4.5	- .44	NS
		12	Post	17.58	5.4		
206	5	25	Pre	19.12	4.1	-1.96	.05*
		24	Post	20.83	2.9		
306	5	24	Pre	17.03	3.5	- .52	NS
		24	Post	17.61	3.1		
304	6	27	Pre	16.77	4.4	- .47	NS
		27	Post	17.44	4.3		
404	7	25	Pre	18.64	3.5	- .30	NS
		24	Post	18.71	3.8		

* Significant at Specified Criterion Level

TABLE 8.22:
SIGNIFICANCE OF PRE-POST DIFFERENCE IN ELEMENTARY STUDENTS' MEASURED ACHIEVEMENT NEED BY TYPE OF SCHOOL AND GRADE LEVEL

SCHOOL	GRADE	N	FORM	MEAN	SD	t	SIGNIFICANCE
107	4	12	Pre	12.58	3.5	-0.41	NS
		12	Post	13.20	3.2		
206	5	25	Pre	14.36	2.5	2.10	NS (Negative Change)
		25	Post	12.84	3.1		
306	5	24	Pre	12.24	3.5	-1.60	NS
		24	Post	11.74	3.7		
304	6	27	Pre	9.00	3.2	.79	NS
		27	Post	8.26	3.9		
404	7	25	Pre	9.68	2.7	.90	NS
		24	Post	9.17	3.4		

* Significant at Specified Criterion Level

ATTITUDE TOWARD SELF

SCHOOL	GR	DIFF
202	5	.04
103	6	.4
106	7	-.6

2=3			
	1=3		
		1=4	
301	302	406	SCHOOL
5	6	7	GRADE
1.3	-.6	1.2	DIFF

ATTITUDE TOWARD OTHERS

SCHOOL	GR	DIFF
202	5	.2
103	6	.1
106	7	-.6

2=3			
	1=3		
		1=4	
301	302	406	SCHOOL
5	6	.7	GRADE
1.1	-.7	-.1	DIFF

ATTITUDE TOWARD SCHOOL: WORK: ACHIEVEMENT

SCHOOL	GR	DIFF
206	5	-.9

2>3	2=3	2=3	
306	306	306	SCHOOL
5	5	5	GRADE
1.6	.4	-.8	DIFF

KEY:	
SCHOOL CODE	OUTCOME CODE
1=Target	> Significantly Greater
2=Target I	
3=Non Target	< Significantly Less
4=Non Target I	= No Significant Difference

FIGURE 8.18
SIGNIFICANCE OF DIFFERENCE IN GAIN SCORES ON ATTITUDE DIMENSIONS IMPORTANT TO CAREER EDUCATION, IN TARGET AND NON-TARGET SCHOOLS GRADES 4-8

- There were no significant differences between target and non-target school students on pre-post measures of attitude toward work and achievement.

- Target school students scored significantly greater gains than non-target school students on the measure, attitude towards school.

Conclusion.

The evaluative judgment on Objective 4.12 was that it was not met.

High School Student Reactions.

Objective 4.13 -- Following pilot tests of experimental curriculum units in cooperating high schools, at least 85% of the learners will endorse the curricula as (a) interesting, (b) answering their information needs (c) congruent with course objectives, and (d) relevant.

The project thrust toward developing secondary school career education curricula was described earlier in this report. The model project curriculum writers were to follow was shown in Section 3.0. The extensiveness of staff activity toward this aim was shown in Section 4.0. A review of the processes actually followed in Project ICE to achieve the aims was described in Section 6.0.

It was envisioned that fairly large-scale classroom testing of the experimental curriculum units would take place. From the data presented above, it was not surprising to discover that classroom field testing was much more limited in scale than had been anticipated originally. Reported in this section are the data available on high school students' reactions to experimental career education classroom trials.

Student Sample.

In the two pilot high schools, curricula prepared by project staff were pilot tested with a total of 160 high school students. Of those, curricula in mathematics were presented to 57 students; science lesson/units were presented to 16 students; social studies curricula were tried out with a total of 63 students; and communication skills lessons were given to 74 students.

Displayed in Figure 8.19 is a descriptive summary of the student sample. It shows the preportion of males and females and the preportion of students in Grade 9, 10, 11, and 12.

The data show that there were more females than males in the sample. Furthermore, there was very little representation of high school seniors. The representation by grade levels was fairly even in the following classes: mathematics, science, and communication skills. However, in social studies classes, nearly all pilot tests were performed with Grade 9 students.

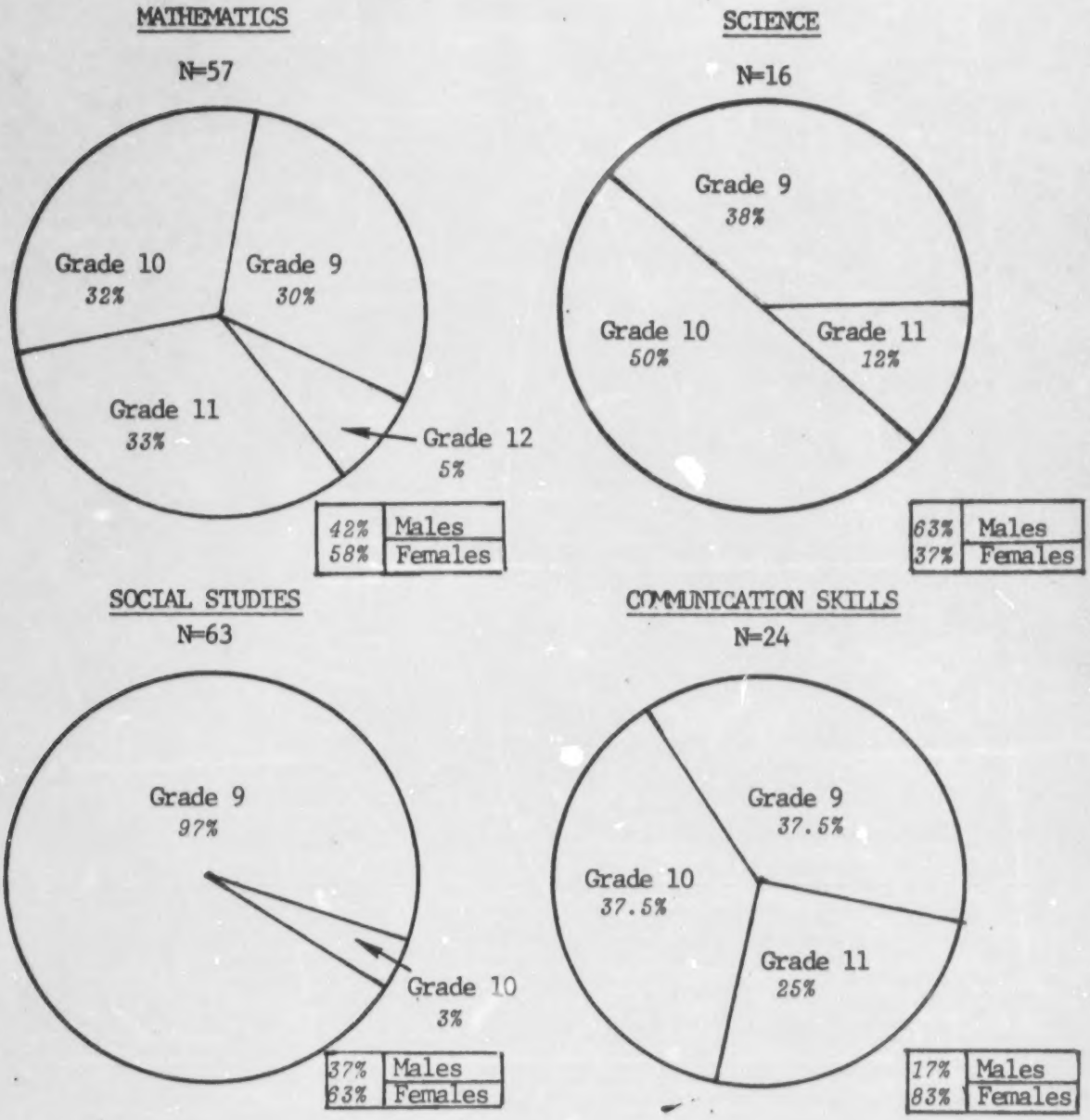


FIGURE 8.19: DESCRIPTIVE SUMMARY OF HIGH SCHOOL STUDENTS PROVIDING FEEDBACK ON PROJECT-DEVELOPED CURRICULA, BY CLASSES, GRADE LEVEL AND SEX

Student Reactions to Experimental Curricula.

The data on student reactions were gathered through an informal questionnaire developed for Project ICE by the evaluator. The questionnaire was administered to students at the close of the curriculum trial test. The data are summarized in Table 8.22.

Interest Value of the Curricula.

Nearly 98% of the students responded to the question asking whether information on jobs and workers made a difference in the lesson. From nearly 30% to nearly 60% of the students in each of the four types of class stated the lessons were much more interesting. From about 30% to 50% regarded the lessons as somewhat more interesting.

Taken together, a significantly large majority considered the lessons more interesting with inclusion of information on jobs and orders.

Information Value.

More than half of the students in all four types of class indicated that the lesson/units had curriculum decision-making value. About 30% believed the lessons were partially helpful. Only about 13% reported that they had mostly not or definitely not gotten career information.

A significant, large majority reported that they wanted to find out more about the world of work. About one-third were interested in the occupational fields used in the lesson, while about two-thirds were interested in other lines of work.

Overall, nearly two-thirds of the students reported that their desire to know more about the work world was a result of a lesson.

Congruence Between Lesson Objectives and Activities.

Nearly 90% of students characterized the purposes for the lessons as very clear or somewhat clear. About 60% believed the activities carried out in the lessons fit the purposes; about 30% believed the activities were partially consistent with the lesson's purposes. Only 5% of the students thought the activities and the purposes were inconsistent.

Student Preferences.

About 60% of those students responding indicated that they favored lessons that showed how school subjects were used by workers. Furthermore, two-thirds of those students responding indicated a preference for more lessons infusing careers in the work world into school subjects. Less than 10% of the students stated they wished to have more lessons in which career information was infused.

TABLE 8.23:
STUDENT REACTION TO OCCUPATIONAL INFORMATION CONVEYED IN EXPERIMENTAL CURRICULA, FREQUENCIES AND PERCENT

Item	Responses	Classes: Math f	Math %	Sci. f	Sci. %	Comm. Skills f	Comm. Skills %	Soc. St. f	Soc. St. %	Summary**
Did you think including information on jobs and workers made a difference in the lesson?	Much more interesting	15	26	9	56	7	29	32	51	MORE INTERESTING 82%
	Somewhat more int.	28	49	5	31	12	50	24	38	
	Neither more nor less	8	14	2	13	3	13	1	2	SAME 9%
	Interesting	2	4	0	-	1	4	1	2	
	Somewhat less int.	0	-	0	-	0	-	2	3	LESS 4%
	Much less interesting									
	N=152									
Did you get information that can help you decide whether or not you would want to work at some of the jobs talked about in the lesson?	Definitely yes	10	18	7	44	5	21	22	35	YES 52%
	Mostly yes	15	26	2	13	10	42	11	17	
	Partly	20	35	4	25	7	29	20	32	PARTLY 32%
	Mostly no	8	14	1	6	0	0	4	6	
	Definitely no	4	7	2	13	1	4	1	2	NO 13%
	N=154									
Do you now want to find out more about the working world?	Yes, this field	17	30	4	25	6	25	22	35	YES 94%
	Yes, other fields	37	65	10	63	17	71	36	57	
	No	2	4	1	6	1	4	3	5	NO 4%
	N=156									
If yes, was this a result of the lesson?	Yes	31	54	9	56	17	71	43	68	YES 63%
	No	23	40	7	44	4	17	12	19	NO 29%
	N=146									

**Percents may add to less than 100 due to omits.

TABLE 8.23: (cont.)
STUDENT REACTIONS TO OCCUPATIONAL INFORMATION CONVEYED IN EXPERIMENTAL CURRICULA, FREQUENCIES AND PERCENT

Item	Responses	Classes: Math f	Math %	Sci. f	Sci. %	Comm. Skills f	Comm. Skills %	Soc. St. f	Soc. St. %	Summary**
Were the purposes for this lesson clear to you?	Very clear	15	26	7	44	7	29	29	46	CLEAR 88%
	Somewhat clear	34	60	5	33	13	54	31	49	
	Somewhat unclear	7	12	4	25	3	13	4	6	NOT CLEAR 12%
	Unclear	1	2	0	0	0	0	0	0	
		N=160								
Did the activities fit in with the purposes, as you understood the purposes?	Definitely yes	10	18	5	33	6	25	16	25	YES 62%
	Mostly yes	20	35	7	44	10	42	26	41	
	Partly yes, partly no	21	37	3	19	7	29	19	30	SOMEWHAT 31%
	Mostly no	2	4	0	0	1	4	0	0	
	Definitely no	3	5	1	6	1	4	0	0	NO 5%
		N=158								
Do you favor lessons that show how school subjects are used by real workers?	Yes	31	54	7	44	7	29	33	52	YES 61%
	Mostly yes	7	12	3	19	2	8	5	8	
	Not sure	16	28	4	25	4	17	15	24	NOT SURE 24%
	Mostly no	2	4	2	13	0	0	0	0	
	No	0	0	0	0	0	0	4	6	NO 6%
		N=144								
Would you like to have more lessons like this in this class?	Yes	26	46	9	56	5	5	38	60	YES 67%
	Mostly yes	13	23	3	19	6	6	7	11	
	Not sure	11	19	2	13	3	3	9	14	NOT SURE 16%
	Mostly no	4	7	0	0	0	0	3	5	
	No	3	5	2	13	0	0	2	3	NO 8%
		N=146								

8.60

186

**Percents may add to less than 100 due to omits.

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TABLE 8.23: (cont.)
HIGH SCHOOL STUDENTS' OPINIONS ON THE RELEVANCE AND PRACTICALITY OF PROJECT-DEVELOPED CURRICULA, FREQUENCIES AND PERCENT

Item	Responses	Classes: Math f	Math %	Sci. f	Sci. %	Comm. Skills f	Comm. Skills %	Soc. St. f	Soc. St. %	Summary**
Was this lesson relevant to what you would like to know about the working world?	Relevant	14	25	8	56	12	50	33	52	RELEVANT 89%
	Mostly relevant	31	54	7	44	9	38	28	44	
	Mostly not relevant	6	11	1	6	1	4	1	2	NOT RELEVANT 11%
	Not relevant	6	11	0	0	2	8	0	1	
		N=159								
Did you think the lesson was practical?	Definitely yes	9	16	6	38	6	25	20	32	PRACTICAL 66%
	Mostly yes	22	39	4	25	12	50	26	41	
	Partly yes, partly no	21	37	5	33	5	21	12	19	PARTLY 27%
	Mostly no	3	5	1	6	1	4	2	3	
	Definitely no	2	4	0	0	0	0	0	0	NOT PRACTICAL 5%
		N=157								

**Percents may add to less than 100 due to omits.

8.61

Relevance.

Nearly 90% of the student respondents characterized the experimental lessons as relevant to their desire for information and practical.

Conclusion.

The criterion was the positive ratings on a list of attributes by 85% of the high school students. As it turned out, the ratings were in the 80's and 60's on the specified characteristics. As measured by the criterion, the objective was considered to have been met to a partial extent.

It should be emphasized, however, that the data were based upon replies from only 160 students in two pilot high schools on a limited number of experimental curricula. The expectations from the program was that a much more sizeable sample of students, representing a greater cross section, would be involved in the curriculum trial test.

Summary, Student Outcome Objectives.

Career knowledge and student attitude measures were administered to samples of students (K-8) in both target and non-target schools. The results were analyzed four ways:

- By grades, all schools
- Within target schools and non-target schools, by grades
- Between target and non-target schools, matched by grades
- Among target, non-target, and the pilot school, by grade

By Grades.

Grade-level analyses indicated the project's major impact was at Grades 4 and 7.

Within Schools.

The results were equivocal. Target school gains were generally matched by gains in non-target schools.

Between Schools.

Overall, there were no significant mean differences between target and non-target schools. 78% of direct, matched comparisons yielded no significant difference. 14% of the comparisons favored the target schools and 8% favored the non-target.

Target, Non-Target and Pilot.

The general trend was pilot school attainment of significantly greater mean scores on both pre and post tests, and for the target schools to score significantly greater gains than the non-target.

Conclusions, Student Outcome Objectives

The obvious conclusion is that the student outcome objectives were not met, and were -- in fact-- the least successful element in the entire project. However, in the evaluator's view, the true status of affairs is less obvious. From the evaluator's standpoint the fact that 78% of the comparisons resulted in no significant difference between target and non-target schools was not surprising. That result was virtually guaranteed beforehand by: (1) the project design and (2) the nature of the objectives set for this component.

Those two factors mitigated against achieving significant difference findings. This point is expanded upon below.

Factor 1: Project Design.

The focus of the elementary school component of the Project ICE was upon teacher awareness. During the course of their training, teachers were encouraged to "infuse career education into the curriculum whenever and wherever possible." The existing curriculum guide was considered exemplary, and its use was not mandated.

There were, thus, no clearly defined curricular programs designated for any schools, at any grade level. Moreover, there was no specific body of career knowledge for which learners were held responsible. The important thing was that classroom teachers obtained experience in infusing career education topics, and that initial success would encourage them to do more.

Nature of Student Outcome Objectives.

Combined with the situation of *lack of clearly-defined program* were a set of outcome objectives which were highly specific regarding the statistical significance of gains to be made, but highly general regarding the subject matter upon which learners were to achieve those gains. The objectives were stated in terms of significant gain scores on the post-test over the pre-test. This format required the use of a pre-post test design. However, given the lack of program definition, the pre-tests were to be administered prior to the evaluator knowing what the course content was to be. Furthermore, it was not specified whether that course content was to be different within types of school or between types of school.

Under those conditions, the finding of "No Significant Difference" was virtually guaranteed before measurement of the objectives was undertaken.

To attempt to offset this, a set of instruments was selected which represented the major instructional themes in career knowledge. These included working conditions, worker activities, worker earnings, etc. Primary and elementary grade classrooms were selected at random to receive these tests. Test treatments were assigned to provide broad coverage, not knowing in advance whether the particular topics would actually be taught in those classrooms. However, through (1) random selection of classrooms and (2) broad coverage of the test treatments,

it was assumed the results provided a representative portrayal of the status of learner outcomes with respect to career knowledge and attitudes.

A Re-Interpretation of the Findings.

The results, when viewed against that background, suggest that the Student Outcome findings be interpreted carefully. That nearly 80% of the target-non-target school comparisons would show no significant difference was built into the project design, in the evaluator's opinion, through curriculum and instruction factors and component objective factors. That as many as 14% of the comparisons showed that superior gains on the part of target school classrooms was a substantial achievement, given the conditions under which they were attained.

The objectives as stated were not met. However, the evaluator would be remiss if he did not point out that in the minority of cases (22%) where significant differences were found, two-thirds of those comparisons showed that target school gains exceeded non-target school gains.

There is, therefore, some evidence to indicate that some consequential, positive student outcomes were occurring within the target school classrooms.

When the career education curricular program attains sufficient definition to permit more precise measurement, the parameters of those outcomes may be determined.

Other Factors.

Aside from the two major factors listed above, there were other factors which were potential sources of invalidity. First, due to the process of measurement itself, a certain amount of error is introduced. Moreover, there are a number of statistical effects that might occur within the pre-test/post-test design. In the evaluator's opinion, these measurement factors were not of major importance.

A second factor was the nature of the non-target schools as a control group. In this project, the non-target schools received a substantial amount of career education treatment. The sources for this instruction were mainly outside Project ICE.

Therefore, the target/non-target comparisons do not represent one treatment group and one control group. Being compared instead were two groups receiving different forms of career education treatment. Given that situation, the failure to find significant differences in test performance was not surprising.

Strengths and Weaknesses in the Component.

The majority of target-non-target comparisons showed no significant differences. The objectives as stated were clearly not met. It was suggested, however, that the fact that even a minority of comparisons showed significant differences favoring the target schools was a plus for the project.

It should be pointed out that the project objectives in career knowledge were the source for nearly all the significant differences. Within the objectives regarding student attitude, there were virtually no significant differences either within schools or between schools.

Therefore, to the extent that there was any type of "success" in the student outcomes component, those centered on career knowledge. There was no evidence to suggest that student attitudes were influenced by the career education project, as meaured by the Student Attitude Survey instrumentation. However, direct classroom observation and verbal reports from teachers suggested that career education was a positive force for influencing student attitudes.

The problem appeared to the evaluator, therefore, to be one of applying the proper measurement device to discover evidence of changes in self concept, attitude to work, career planfulness, and similar attitudes. As was the case with knowledge, a clear delineation of exactly what it is we are expected to find through formal measurement is needed before a pre/post test design can be used effectively to detect differences.

Section 9.0

CONCLUSIONS AND RECOMMENDATIONS

In this section of the report are the conclusions drawn from the evaluation data. Recommendations which seem warranted by the conclusions were put forward.

CONCLUSIONS

Goal Attainment

All performance objectives set for Project ICE were measured according to the criteria specified for those objectives. Based upon the data which emerged, an evaluative decision was made regarding whether the objective had been *Met *Met Partly *Not Met.

A review of the evaluation judgments on each component objective indicates that project staff were moderately successful in reaching program goals. Overall, 53% of project objectives were met either fully or partially. Of the 46% of objectives not met, nearly two-thirds of those were in the component, Student Outcomes.

Shown in Table 9.1 is a summary of the status of all objectives set for Project ICE. A "box score" on each project component is given in the lower portion of the Table.

The summary in Table 9.1 shows that 38% of the objectives were met fully and 21% were met partially. For the component curriculum development, 75% of the objectives were met either fully or in part.

All the community involvement objectives were met in full. For the component, student outcomes, the picture was different. Nearly 90% of objectives in that component were not met.

That figure was somewhat misleading, however, as the objectives set for that component were appropriate for a more mature project with a well-designed curriculum. The objectives and the evaluation procedures which were structured upon those objectives did not reflect the realities in program implementation. In all likelihood, the manner in which the objectives were stated "stacked the deck" against this particular project attaining those objectives.

This purely quantitative manner of looking at the project is not entirely sensitive to all that was accomplished. It does, however, provide a means for making some assessment of the relative success achieved by each project component.

The data in Table 9.1 suggest that Community Involvement, Curriculum Development and Inservice Training were the most successful

TABLE 9.1:

A SUMMARY OF EVALUATION DECISIONS

Objective Number	Inservice	Curriculum	Community	Student Outcomes
1.1.1	M			
1.1.2	M			
1.1.3	P			
1.1.4	P			
1.1.5	P			
1.1.6	N			
1.1.7	N			
1.1.8	M			
1.1.9	M			
1.2.1	P			
1.2.2	N			
1.2.3	N			
1.2.4	M			
2.1		M		
2.2		P		
2.2.1		N		
2.3		M		
3.1			M	
3.2			X	
3.3			X	
3.4			M	
4.1				N
4.2				Y
4.3				N
4.4				N
4.5				Y
4.6				N
4.7				N
4.8				Y
4.9				N
4.10				N
4.11				N
4.12				N
4.13				P

KEY:
M= Obj. Met
P= Met Partly
N= Not Met
X= Not Measured
Y= Process Obj.

	f	%	f	%	f	%	f	%
Met	5	38.0	2	50.0	2	100.0	0	0.0
Partly Met	4	31.0	1	25.0	0	0.0	1	11.1
Not Met	4	31.0	1	25.0	0	0.0	8	88.8

aspects of the project. Clearly, Student Outcomes was least successful, as determined by the proportion of objectives achieved.

The project should be viewed qualitatively, also. Given below is a qualitative review of the various aspects of Project ICE.

Program Design.

The project was generally well designed. The intention was to implement career education into an urban school system in a more comprehensive manner than had heretofore been attempted.

The program was based upon needs in the school system, and the objectives, staffing patterns, and program activities seemed consistent with those needs.

The major problem during the program design stage was determining the number of schools that would be served through the project. This part of the program design was modified several times between May and September, 1975. The result was that the onsite, within-school inservice training program was delayed while staff delivered a series of large-group, single-experience workshops to teachers from many schools. There were other design problems which arose as the project was implemented throughout the year. These problems were related to the process-strategies planned in advanced, in order to achieve objectives. They were not readily observable at the beginning of the project, however. As the evaluator commented earlier in this report, "Hindsight is always 20/20".

Program Implementation

The project was generally implemented according to its design. The categories of staff specified for the project were obtained, and they pursued those activities related to their job descriptions. As was noted before, some modifications were required, as the procedural steps outlined in the project design did not work in the realities of an actual school district. These modifications will be discussed below within the topics, inservice training and secondary curriculum development.

Teacher Inservice Training.

Through the inservice training program, teachers made significant gains in knowledge of career education and career education concepts. Moreover, they made significant increases in measured attitudes of accord with the program and its intent.

Target school teachers of Grades 4-6 took part in an interesting series of workshops, held in various community locations.

The project inservice trainers began the onsite training program in November, 1975. Two staff were assigned to 15 schools.

At first they attempted to work with each teacher in those schools. However, it soon became apparent that some teachers were more enthusiastic and cooperative than others. Accordingly, the design was modified so that the trainers delivered in-class help and assistance to those teachers most attuned to the project.

This strategy was a modification of the original project design. However, it seemed logical and it resulted in a positive, forward-going program in each school. Later in the year some of the teachers that had held back began to participate in career education.

Classroom Infusion.

There was a substantial amount of variation among teachers in the amount of career education they delivered in the classroom, and the quality of their programs. Some teachers implemented career learnings consistently in most school subjects, while others did not. Overall, an increasing amount of career education was delivered.

External observation revealed that the career infusion which took place in target schools was more extensive and scholarly than that which occurred in non-target schools.

High School Curriculum Development.

The project curriculum writers produced written lesson/units in four major subjects in excess of the numbers specified in the project design. These curricula were generally well-done. The math and science curricula parallel the instructional topics found in most text books. The curricula for social studies and communication skills contain some standard topics, but they also include some highly specialized units, of limited interest.

A pre-publication review of most of the curricula revealed that inadequate coverage was given to student self-analysis -- career decision-making. This was corrected by inclusion of student worksheets in the final documents.

The project curriculum writers modified the process-strategies set forth in the program design in order to accomplish their aims.

Community Involvement

For a group of persons volunteering their time to a school project, the Community Advisory Council functioned very well. Some members were the key persons in achieving the accomplishments of the council.

The Community Learning Resource Guide was produced on schedule. Moreover, the processes set forth for its development were followed to the letter.

There were some production delays in getting the manuscript printed, and it was not available to the project by Fall, 1976.

Student Outcomes

The student outcome objectives as measured by the pre and post tests selected for the project evaluation were not met. In a significant majority of the cases, comparisons between target and non-target schools revealed no significant differences.

However, in the minority of cases where significant findings occurred, they favored the target schools.

The problem area in this objective was identified by the evaluator as lack of a sufficiently-defined curriculum that would support a pre-post test evaluation design.

RECOMMENDATIONS

1. It is recommended that career education program planners investigate thoroughly the arrangements which must be made beforehand in order to implement process strategies. In Project ICE the needs, resources, and objectives were generally viable.

   The major problem areas experienced by project staff seemed to center upon trying to implement process strategies which were over-optimistic. For example, greater knowledge of the operational plan for system high schools might have alleviated some of the problems reportedly experienced by the curriculum writers.

2. It is recommended that in future program planning the developers clarify early the scope to be covered by the project. Failure to do so in Project ICE led to several program revisions. Moreover, it led to commitments for several large group workshop programs which delayed somewhat the start-up of the individual building inservice effort.

3. It is recommended that project staff set "assessment of liklihood of teacher infusion of career education instruction" as a workshop outcome.

   From the experience in Project ICE, it was seen that teacher trainees readily mastered the career education concepts. Also, they responded "correctly" on the attitude measure so as to register some significant gains.

However, the relation between test scores and the extent to which the teacher actually delivers career instruction following the workshop is not known precisely.

To attempt to augment the results of the workshop, project staff should give serious consideration to identifying factors associated with those teachers who go on to infuse career education in their school programs. This knowledge should lead to differentiated training programs and better long-term after effects from the workshop programs.

4. It is recommended that differentiated training routines be developed for the in-building in-service program. Experience seems to indicate that classroom teachers were at various stages of readiness to begin implementing career education.

   Therefore, it seems logical, that the trainers should attempt to identify the types of teachers encountered in the schools and to develop training routines that fit best each teacher type.

5. It is recommended that an attempt be made to identify the several "levels of sophistication" used by the various classroom teachers as they implement career education. This could be accomplished through observational analysis.

   As a result of this effort, training strategies could be developed to move teachers from lower-to-higher "levels."

6. It is recommended that project staff re-think and re-frame the intended student outcomes from a career education program. If the program is left "open" with no well-defined sequenced curriculum, the outcomes should be stated in a different form from statistical gains on tests of specific knowledge and attitudes.

   On the other hand, if program planners expect to move toward a defined, sequenced curriculum, then the type of objective used for ICE is appropriate.

   In any case, the objective (and its corresponding evaluation) should closely relate to what is actually going to occur in the classroom.

The only alternative to this recommendation seems to be identification or development of a sufficiently general test of career knowledge that will fit whatever program is offered in the classroom. However, such a test should be able to discriminate between those students receiving career education and those who are not.

7. It is recommended that project staff develop a system for preserving exemplary lessons developed by classroom teachers and disseminating those lessons to other teachers participating in the project.

   From indications the evaluator has seen, such systems may have been developed by the time this report is being written.

OVERALL CONCLUSIONS ON THE PROJECT

The program was generally successful. The large percentage of objectives which were not met appeared to the evaluator to relate as much to the way the objectives were stated as to any failure on the part of project staff.

The major accomplishments of the project appeared to be these:

- The awareness level of elementary teachers was raised concerning career education and the infusion of career topics in the school programs was stimulated.
- An exemplary set of curricula, designed to infuse career education into major high school subject areas, was produced.
- Involvement between the project and the larger community was generated, and a variety of assistance from community sources was secured for the project.
- Classroom teachers developed career education activities for infusion within their school subjects, and they delivered these programs at a rate which increased throughout the year.
- A community reference guidebook was produced through the project; this document is a resource needed by the schools for supporting a community-based career education program.

The area where the project was least successful was student outcomes. However, it was encouraging to note that the minority of statistical

comparisons which resulted in significant differences did favor the target schools. It should be emphasized, however, that this result applies to career knowledge. There were virtually no differences, nor many significant gains in measured student attitudes. An effective approach to self-concepts and attitude instruction in the classroom remains a program need.

The project accomplishments, in the evaluator's opinion, laid the foundation for further implementation of career education in a more intensive fashion. Project ICE is the second Federally-funded program in career education in the school system.

The initial program in the school system centered its efforts upon three pilot elementary schools. As the second project, ICE represents a second-stage step in the development of the comprehensive career education program for all units in a large, urban school district.